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MAY P. A. A.'S BOEING STRATO-CLIPPER "FLYING CLOUD" 1940

# Southern Flight

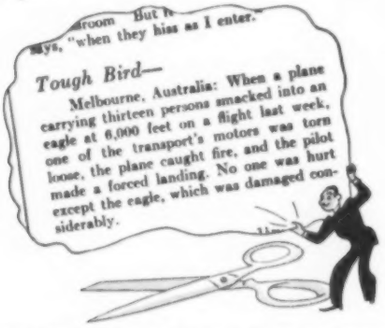
# The Birdmen's Perch

**One thing we're strong for is giving credit where credit is due. Pennsylvania-Central Airlines has just begun its 14th year of operation. The Anniversary is noteworthy, for throughout that span, there has been *no fatality to passenger or crew member*. So, in our official capacity as Editor of the Birdmen's Perch, we hereby doff our helmet and bow very low to this unique record. And, as Manager of Gulf's Aviation Department, we want to say that we're downright proud that they've used our products for six years of that time—and since 1938 used them exclusively!**

**MAJOR AL WILLIAMS, alias "Tattered Wing-Tips," Mgr. Gulf Aviation Products, Gulf Bldg., Pittsburgh, Pa.**

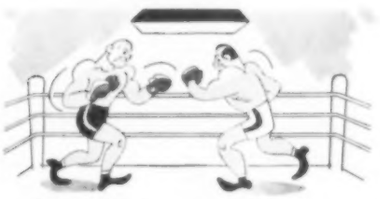
## DOWN MEMORY LANE

Some of you veteran Perch fans may remember that back in December, 1937, a correspondent asked what happened when a bird tangles with a propeller. Whereupon half our readers promptly tangled with the other half in an argument that lasted till we called it off for lack of evidence in September, 1938. New evidence recently appeared in a *Newsweek* magazine paragraph reproduced below. Looks like both the "goodbye-bird" and the "goodbye-motor" factions were right.


says, "when they hiss as I enter.
Tough Bird—
Melbourne, Australia: When a plane carrying thirteen persons smacked into an eagle at 6,000 feet on a flight last week, one of the transport's motors was torn loose, the plane caught fire, and the pilot made a forced landing. No one was hurt except the eagle, which was damaged considerably.

## MORE-THAN-MEETS-THE-EYE DEPT.

Ever notice how two fighters can look absolutely evenly matched until the bell rings? Then one will absorb punishment like a sponge while the other folds almost under one punch.



Oils are like that, too. They look alike, but there's no end of difference in their stamina. *The reason?* Just like with fighters, it's the way they're trained down or refined.

That's why we recommend Gulfpride Oil as *the* oil that can take it! For Gulfpride is refined not only by conventional methods but also by the Gulf-invented Alchlor process that works out up to 20% more surplus waste and sludge. And when you refine a 100% Pennsylvania that thoroughly, you've got a lubricant that can lick friction to a standstill!

## FIGURE-SHARKS ONLY

A pilot with a fifteen-passenger plane offered to take a high school class of 30—15 boys and 15 girls—for a ride. When they reached the airport, it was discovered that time would not permit more than one flight, hence half the class were out of luck. Hearing the teacher and principal decide to line the class up and count out every ninth pupil till only 15 remained, the star mathematician immediately figured out what places the boys should preempt so that every girl would be left on the ground. Can you do it?

We've got the right answer handy, so send in yours to Professor Wing-Tips to be checked.

## THIS MONTH'S WHOPPER

Dear Major:

Here is a story that I suppose you will have to publish as a whopper though it is as true as most of the stories we read in the papers about planes.

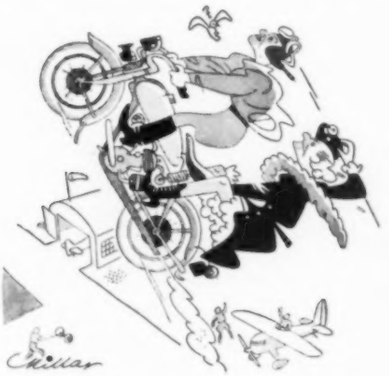
As we all know, airplanes need a good, high-test and high-octane gasoline like G.A.G. (Advt.) But what most people don't know is that motorcycles do also. But maybe I better get into my story.

Last Sunday—a bright, sunshiny day—I was breezing along on my puddle jumper when to my disgust, dismay, etc., I had the experience that always befalls gents who take—not their best girl—but their mother-in-law out for a spin. You guessed it, I ran out of gas on a lonely road.

Well, sir, there was nothing for me to do but push popcycle and battle axe to the nearest source of gas, the local airport. When I got there, I found the only fuel on sale was Gulf Aviation. So, not without crossing my fingers against getting put out of even the dog house, I filled her up.

Then I wheeled her over to the runway, Old Frozen Face climbed on back, and I stepped on the starter.

Major, before I even knew what was coming off, we were off! Raced down the runway, took to the air, and headed for the moon. To give the old girl credit, she never peeped. Just hung on and let me do the thinking.



Having read some time ago that the first planes were controlled by shifting the pilot's weight, I leaned to the right and cut the switch. Believe it or not, we came out of that tight turn with exactly enough speed to glide five miles back to the airport. You see, those tilted footboards got too much pressure under them and lifted popper, m.i.l. and me in under a fifty-foot run.

Now here's the trouble, Major; also the blessing. I don't have a solo license, so the C.A.A. won't let me develop my new G.A.G. flyingcycle without some dual instruction. And every cent I had saved went for railroad fare for my mother-in-law who left next day to live with my brother in California.

All contributions gratefully received—larger ones in proportion.

**Paul F. Metzger**

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Polly Smith Photo.

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# Southern Flight

MAY, 1940 Vol. XIII, No. 5

*The complete monthly digest of aeronautics in the South and Southwest.*

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### NEW DEAL DIPLOMACY

THE present Administration in Washington continues to do a swell job of selling America short every time it gets the chance just as it has been doing ever since it came into power. So many of its crack-pot panaceas have been miserable failures that they will do most anything, try most anything, with reckless abandon, even to dishing out our most precious and invaluable military secrets to foreign governments.

And that's exactly what they have done with the decree from the holy city on the Potomac—releasing our latest model fighting craft to belligerent countries abroad before our own military services have had them in operation. Our own expansion program must be set aside just because the Roosevelt-Morganthau-Woodring triumvirate decree that the Allies must have our best fighting craft. How can we expect anything else but a weakening of our own defenses from such an asinine and reckless move? Despite all the pretty phrases that gushed out in explanation of why they did it, how it would strengthen our aircraft industry and national defense rather than cripple it, we still would like to know what our army and navy expects to do while the Europeans are walking off with the cream of our military fighting craft? And who can deny that the airplanes being released for foreign consumption are among our most priceless military secrets until others are designed and constructed to take their place? And how in heaven's name can our military pilots boast adequate training without service and tactical operations of the best equipment our engineering genius can supply?

But the Triumvirate has spoken. And American defense is sold down the river. What are they thinking about? Are they among those who believe by helping the Allies now, even at our own expense and danger, they will keep us out of this mess? Or do they figure it's a good investment in protecting the two large debtor nations of the last war, so that those debts will be more secure?

We maintain that our American aircraft industry would get just as much lucrative business from abroad if we could operate under the old and protective system of releasing for export only those craft that our military services say should be released, *after* our American boys gave them the works and became thoroughly familiar with the latest stuff from design board and factory.

The decree is not unexpected. Washington never did satisfactorily explain the presence of Frenchmen aboard a secret Douglas bomber that cracked up during demonstration flights, which our own American pilots and our own people didn't know existed. That's the way this Administration works—back-door, dollar diplomacy, and just among ourselves, it's a helluva way to do business in a world of international gangsters, rapists and power-politicians.

Instead of selling our best aircraft abroad, we'd like to ask the Triumvirate why we can't buy all the production our factories can produce for home consumption and home defense, and let the hungry foreigners take the stuff our military men no longer consider tops? They can't answer that one because the people of this nation wouldn't accept the one they probably would give.

What's next, Mr. Roosevelt? Airplanes on Credit?

### FINGERS IN THE PIE

AVIATION is constantly being plagued by various groups of silly nincompoops who take it upon themselves, or get the idea that some divine providence has

*(Continued on page 6)*

# SAFETY IN NON-SCHEDULED OPERATIONS

The 1939 record shows improvement over 1938, but there is still much work to be done toward accident prevention in private flying

**TOM HARDIN**
Chairman, Air Safety Board, CAA

A YEAR has elapsed since there has been a fatal accident on our domestic airlines, and I doubt if any other common carrier engaged in interstate commerce can show as good a record.

Unfortunately the unparalleled safety record achieved by the airlines in 1939 has not been matched in the field of so-called private and miscellaneous flying which presents us with our most serious safety problem today. A recent analysis by the Air Safety Board of its data on fatal accidents in relation to the Civil Aeronautics Authority's annual mileage recapitulation of all civil flight operations graphically reveals the amazing contrast between the safety factor in private flying and that of domestic airline travel.

This study shows that despite a substantial gain in the safety of private flying during 1939 as compared to 1938 and other preceding years, scheduled air travel in the United States was nearly 4200 per cent safer than transportation by private planes, including charter service.

The figures speak for themselves. The scheduled airlines flew a total of 82,554,239 revenue miles in 1939 and suffered only two fatal accidents, an all time safety record of 41,277,119 miles flown between fatal accidents. Private flying activities, on the other hand, showed a total of 182,000,000 miles flown and 189 fatal accidents during the same period, an average of only 962,962 miles flown per fatal accident. Discouraging as the latter figures are in comparison to the showing made by the domestic airlines, they nevertheless display a marked improvement over private flying activities in 1938 with its total of 129,359,095 miles flown and 172 fatal accidents, an average of 752,088 miles between fatal accidents.

Another interesting fact brought out by the Board's analysis is that the airlines in 1939 for the first time carried more passengers than were transported in private and charter service aircraft, the air carrier total for the year being 1,717,090 passengers as compared to the private flying total of 1,640,000. In 1938 the domestic airlines carried 1,176,858 passengers, while private flying chalked up a total of 1,575,151.

There were a total of five fatal accidents in scheduled air carrier service during 1938 and two in 1939 as compared to 172 fatal accidents in private flying during 1938 and 189 in 1939. The increased safety of airline travel is illustrated by the fact that 13,933,765 miles were flown between fatal accidents in 1938 as compared to 41,277,119 miles between fatal accidents last year—airline travel was three times as safe last year as the year before.

THE staggering difference between passenger safety on the airlines and in private flying demonstrates, beyond any possible argument, the results that can be achieved through controlled flight operations as contrasted to uncontrolled flying. If the same safeguards and restraints could be thrown around the private flier that are now applied to airline operations, the tragic story of those figures need not be repeated in future years.

That progress can be made in this direction has already been demonstrated in the controlled flight instruction required by the Civil Aeronautics Authority's current student training program. More than 100,000 hours, or approximately 7,000,000 miles, were flown in this program before the first fatality occurred. Compare this to the average of 962,962 miles flown per fatality in all private flying activities during 1939, and the life-saving possibilities of controlled flight activities immediately become apparent.

While these two figures are not strictly comparable for the reason that part of the student training program record was built up in 1939 and part in 1940, it is still highly significant that the early stages of the Authority's controlled flying program proved more than 600 per cent safer than the record established by private flying generally in 1939. It is also worthy of note that the figures quoted here on private flying activities include the laudable record established by the Authority's student training program and consequently give a more favorable picture than would be the case had statistics been prepared for 1939 solely on the basis of private flying activities other than those directly sponsored by the Civil Aeronautics Authority.

While the Air Safety Board recognizes and long ago officially endorsed the fundamental soundness and efficacy of controlled flight instruction such as is being given in the Authority's student training program, it is convinced that there is an even more basic approach to the problem

*(Continued on next page)*

THOMAS O. HARDIN
Chairman, Air Safety Board

of increased safety in private flying. The Air Safety Board is a fact-finding and fact-facing organization and it knows as a matter of practical common sense that the degree of skill and the degree of supervision with which we have to deal in airline flying can never even be approximated in the private flying field no matter how hard we strive toward that end. Consequently, the Board is convinced that steps must be taken to provide the private flier with airplanes that are inherently simpler to operate and safer to fly than conventional present-day aircraft, the characteristics of which are so largely responsible for the deplorable casualty rate in all non-airline flying. More than half of the fatal accidents with which we have to deal in private flying are due to stalls and spins and, in our opinion, are definitely *preventable* accidents.

I make that statement advisedly because it is possible to build airplanes which are inherently spin-proof and devoid of disastrous stalling characteristics—not tomorrow or next year or some other time in a dreamer's future, but right now. As a matter of fact, such airplanes have been and are being built and flown and are available at the present time.

AS long ago as last July, the Air Safety Board, in reporting to the Authority on its analysis of 627 accidents which occurred during the calendar year 1938, involving the three leading types of light aircraft in this country, made the statement that (I quote) "It is apparent, from even the most cursory review of these reports, that the flying and ground handling characteristics of the aircraft concerned leaves much to be desired from the standpoint of inherent safety." Furthermore, the Board made the flat recommendation "That the Civil Aeronautics Authority take steps to encourage or require incorporation of built-in safety characteristics in the basic design of future light airplanes which will make them inherently difficult or impossible to spin or stall."

Its judgment in the matter subsequently was confirmed by no less an authority than Dr. Vannevar Bush, Chairman of the National Advisory Committee for Aeronautics, who testified last December before a committee in the House of Representatives that (I quote) "A research program is under way leading to the development of a private-owner type of airplane that will have greater inherent safety, in that it will be spin-proof. The results are encouraging and we hope that by this time next year there will be a *number* of airplanes available which can properly be called spin-proof."

That the members of the Civil Aeronautics Authority have been thinking along the same lines is well known. More than a year ago, a member of the Authority made the following statement before 600 private pilots who had flown their own airplanes to the annual All American Air Maneuvers at Miami:

"Heretofore private flying has been marred by an alarmingly high percentage of accidents, fatal and otherwise. It is felt that this has been due in part to the lack of adequate and uniformly enforced standards of instruction, both preliminary to and during flight training, and that steps should be taken to remedy this situation.

"Since the Civil Aeronautics Authority is charged with insuring the safety of flying as well as its orderly encouragement and development, it is also imperative that accident prevention should be undertaken from another approach—that of basic improvement in the vehicle used for flight training—as well as in the methods of instruction. Specifically, the Authority believes that steps should be taken to encourage built-in safety in the future construction of aircraft designed for use by the private flier. This calls for nothing new or unknown; it simply contemplates the requirement that known and proven safety features be incorporated in the fundamental design of such aircraft."

That language is clear and unequivocal. It has recently been indicated to us that the Authority is about ready to take definite action along these lines and the Safety Board sincerely hopes that this is is the case—that real action will soon be taken on what up to now has been a subject which all concerned have handled only by wishful-thinking and wishful-talking.*

## Just Among Ourselves

*(Continued from page 4)*

guided them, to direct the destinies of aviation in their respective communities or spheres of interest.

These Miss Molly Busybodies can be divided generally into two categories—one who finds in aviation a chance to be publicized in the home town newspaper, who ties onto the flying game because of some perverted idea he or she has of romance; and the other type, by far the more dangerous, who has clever ulterior motives in creating some kind of a political job at the expense of those who fly or make their living from airplanes.

We have to watch out for this latter type. The former type is more or less harmless, more to be pitied than feared. But his country cousin, the bird that sees in aviation's progress a dandy opportunity to pick a nice juicy plum—he's the rattlesnake in the cactus patch.

A great many of our States are fertile ground for such connivers. During the last five years there has been an epidemic of State aviation laws throughout the land. With the exception of three or four States where intelligent men are running the show, we cannot see much decent accomplishment or an outstanding job *for the good of aviation*, due to the maze of local politics and the primary function of taxing airplane owners for the single purpose of creating a pork-barrel job. There's only one animal lower than the non-flyer who goes out for State regulation of aeronautics and that's the experienced man in aviation who sees in the present state of affairs an opportunity to get a good soft position under the guise of doing a great, grand job for the flying game.

We fought it in Texas two years ago. A State Senator had a nephew who was graduating from law school. The Senator introduced a bill in the Legislature (written by the law student) that would create a State Department of Aeronautics, provide for the licensing of airmen, have one State inspector (imagine covering the State of Texas with one inspector!) and here's the good part, take all the gas tax money, levy a State tax on every airplane, and charge a good healthy licensing fee for all carriers, scheduled or non-scheduled charter operators. By the grace of God and the banding together of airmen from all over the State (mostly the latter) we were able to kill the bill in committee. Unless we had fought tooth and toe-nail, the unsuspecting Legislature, knowing practically nothing about aeronautics except that airplanes are awfully dangerous, would have passed the bill.

Aviation needs the energy, help and assistance of people in all walks of life. We need the Johnny Q. Publics in our organizations and in all our local undertakings for improving the airport, working for better services, encouraging our operators and educating the citizenry on flying, but not to run our affairs or dictate policies.

There is a ripe opportunity for States to go hog-wild with unnecessary laws, regulations, taxes and commissions now that we are on the threshold of a mild boom and flight is capturing the fancy of practically everyone. It's up to the people in the business to see that such calamities are avoided, especially before they get a good start.

*Editor's Note: This feature is an excerpt from Mr. Hardin's address before the New York Bar Association, March 6, 1940.

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# FROM SHOESTRINGS TO SECURITY

How it all happened is a saga of American Business . . . Chicago & Southern's history is typical of our nation's secondary route operators now in the midst of well planned expansion programs

**GEORGE BOUNDS**

ONE warm May morning in 1933, in the offices of the Lockheed Aircraft Corporation in Burbank, California, the Company's president, Robert E. Gross, was talking about old times with a young flyer just out of law school, who was looking for advice on a career in aviation.

Although workmen were busy in the factory shops nearby, Lockheed had yet to complete its first transport aircraft and so the two men had something in common. For both the future was still uncharted, for both it seemed to hold much of doubt and of opportunity.

But Gross at least had a factory, while Carleton Putman with whom he had talked had only his private, six-passenger Bellanca parked in the lot outside.

As they conversed, a door opened and the Company's secretary, Cyril Chappellet, walked in and joined the discussion. As if voicing an idea that had just struck him, Gross turned to Chappellet and said:

"By the way, Cyril, what about that 'milk-run' up the Coast from Los Angeles to San Francisco through Santa Barbara and Monterey? You once thought of starting a line through that country. What do you think about Putman's having a try at it?"

Chappellet glanced out the window at Putman's old Bellanca, then his eyes twinkled humorously as they looked beyond over the mountains to the northwest.

"Well," he said, "Why not? You can use my airline ticket agency downtown for an office if you want. I've a man down there who might be willing to help you develop traffic."

Putman didn't take long to reach a decision. Airlines were already operating over most of the country's desirable routes. Here, at least, was a possible last chance.

Putman found another Bellanca in Chicago, bought it second-hand from Wayne King, the orchestra leader, and flew it back over the Rockies to Los Angeles. On June 25, 1933, the new line made its first flight from Los Angeles to San Francisco by way of Santa Barbara, Santa Maria, Paso Robles, Salinas and Monterey.

Many airmiles lie between these shoestring beginnings along the California coast in 1933 to the half-million dollar concern now operating from Chicago to New Orleans. Putman's line was a precarious investment indeed that spring of '33 with no mail contract or other help from the Government and no protection against being squeezed out by larger companies.

THE line operated for about a year in California, performing some 250,000 miles of day and night flying. The company was known as "Pacific Seaboard Air Lines" in those days, and attracted no national attention. But it was in this period of obscure effort and seemingly hopeless struggle that the foundations of the present organization were laid.

Then, suddenly, one February morning in 1934, opportunity struck. Putman tells the story in this way: "I was flying back to California on United Air Lines from Washington where I had made a futile effort to persuade the Post Office Department to establish a mail service along our route. We had been forced to land by weather at Rock Springs, Wyoming, and had spent the night at a hotel. When I came down for breakfast in the morning I picked up the local paper and found nothing but headlines about the cancellation of all the country's air mail contracts the day before. I knew then that our chance had come."

The next few months were full of suspense. It was necessary for the Government to readvertise every mail route previously in existence, and to call for bids. Officials of the large lines, operating the major routes, were naturally distracted. And in many small offices throughout the land lights burned late as operators who had worked for years without any mail revenues calculated their chances in a new deal for aviation.

Among the latter were the executives of Pacific Seaboard Air Lines, and when the first group of bids were opened in Washington, their bid of 17½ cents a mile for the Chicago-New Orleans route was the lowest of any ever received by the Post Office Department. But to men who had been operating an airline at a loss for many months, 17½ cents a mile of additional revenue seems like a lot of money!

PLANS were at once made to transfer all the Company's flying and shop equipment and its personnel from California to the Midwest. Hectic days followed. Only a few weeks were available in which to establish headquarters at Memphis, sign gasoline contracts, lease emergency landing fields all the way from the Great Lakes to the Gulf, buy two more Bellanca planes and arrange the thousand details of a new airline operation.

Finally the day arrived for the first scheduled flight. Much depended upon it. In Memphis, a crowd of leading citizens, a committee of postmasters, and a host of lovely girls with arms full of flowers formed a colorful reception group. Time passed and no ship arrived. It was due in from New Orleans via Jackson at noon. Over an hour passed and still no airplane. The reception committee grew restless. Putman had his operations man get Jackson on the telephone. Jackson advised they hadn't seen the ship either. So the reception committee went home.

That night the Coast Guard found the ship in the swamps on the north shore of Lake Pontchartrain. Everyone aboard was safe and sound. It was the ship Chicago & Southern bought second-hand just before the service started and the last fellow to work on the overhaul had failed to put a cotter key back in the timing gears, so the engine quit soon after take-off from New Orleans.

Putman enjoys telling the story of the airline's first flight. He can afford to speak of it now, for the days of second-hand airplanes with single engines are no more. The very next year he put on bi-motored equipment and in 1936 inaugurated Lockheed "Electra" service.

THE history of Chicago and Southern after that June day in 1934 is a record of patient development and success. There were lean years financially, but progress was constant. A young and dynamic chap in St. Louis by

LEFT: One of Chicago & Southern Air Lines' new DC-3 transports which will be placed in service May 1 between New Orleans and Chicago. At the controls is Captain V. L. Hoganson, veteran million miler. RIGHT: Inspecting one of the new Wright G-200 Cyclone reserve engines are, left to right, Reed Knight, chief pilot; Bruce Braun, operations manager; "Doc" Anderson, superintendent of maintenance, and J. A. Young, purchasing agent. Over $76,000 has been invested by the airline for spare engines of the G-200 series.

the name of D. D. Walker who had himself bid on the Chicago-New Orleans contract, joined forces with Putman and made a substantial investment in the Company. Today Walker is recognized as one of the best sales executives in the industry, and his leadership has done much to account for the ever increasing patronage of the line.

So, too, with Operations. The pioneer nucleus of the California period expanded and attracted men like Bruce Braun, who came to the Company direct from the Government's Inspection Service as Vice President in Charge of Operations. It was Braun who supervised the modernization of the line, installed two-way radio, established scientific methods of dispatching and weather forecasting, and in these and a hundred other ways contributed to Chicago and Southern's enviable safety record.

Meanwhile Federal laws and regulations were changing as the industry grew. Mail rates, so essential to the young transport industry were naturally in a state of flux as better equipment increased the cost of operations. The strides made by this infant but lusty public utility were almost bewildering to Congress. The Post Office, the Department of Commerce, the Interstate Commerce Commission—all exercised the often conflicting powers of federal regulation which were destined in 1938 to be brought together and lodged in a single government agency—the Civil Aeronautics Authority. Through these years of confused government policy Chicago and Southern steered a difficult, but steady course. Its mail rate rose from 17½ cents to 29 cents and then to 32 cents a mile as larger airplanes were placed in service year by year and the Government's mail pay policy developed into a rational plan. Frequency of schedules was increased from one round trip to three round trips a day, on two of which the Company now receives mail revenues.

But none of this was accomplished without exhaustive effort. The public need for more and better service had to be clearly and convincingly presented to the Government and the cost had to be justified. In this struggle Chicago and Southern had one great advantage. In the office of Vice President and Treasurer sat a young California lawyer who had abandoned a successful San Francisco practice in 1934 to throw in his lot with the airline. Today Amos Culbert is as well known in aviation for the thoroughness of his briefs, the completeness of his statistics and financial statements, and his indefatigable industry as are the other executives of the Company in their respective fields. All of them work together in unusual harmony.

Perhaps it was this fact, as well as the steady growth of air transportation as a business, which made it possible for Chicago and Southern in 1936 to float the first public financing ever attempted by any but the major airlines. And perhaps it was this point, coupled with the regular payment of dividends upon its stock, which made possible in 1939 the negotiation of bank loans with which to purchase Douglas DC-3 21-passenger planes for service in 1940. Again a small company accomplished what hitherto only a few large lines had been able to achieve. Bankers like success, and they particularly like the promise of the future when success has been consistent over a period of years.

SOME night this month watchers at the airports along the "Valley Level Route" will see a 21-passenger Douglas DC-3 transport lift its wings. A pretty stewardess will serve hot dinners to the passengers as the plane swings around toward a southern moon. Powerful Wright Cyclone G-200 engines with full feathering propellers will be in evidence, as will Lear automatic direction finders of the latest design and new Eclipse direct drive starters. New 1,500-watt direct generators will be used for the first time on commercial transports.

For Chicago and Southern, like most of our Nation's smaller airlines, are expanding to take care of unprecedented business, first with new equipment, and later on this year with a new maintenance base now nearing completion at Memphis, Tennessee. Chicago and Southern's entire administrative, traffic, advertising, operations and maintenance personnel of more than 200 will be ensconced in the new quarters sometime in August.

The airline indicated during the latter part of 1939 that it would move from St. Louis and establish headquarters in Memphis in order to bring about a more centrally located operations base. Memphis is 500 miles from Chicago, 366 miles from New Orleans and should the Company be successful in acquiring operation of the Louisville-Memphis-Houston airway, the headquarters will be 360 miles from Louisville and 500 miles from Houston.

It is estimated that the Company, by the time it moves to Memphis, will have spent $750,000 for its expansion program which includes new equipment, etc. The airline

*(Continued on page 18)*

# NEW EQUIPMENT REVIEW

## C-W 1,000 HP INTERCEPTOR-FIGHTER

A NEW Interceptor-Fighter, powered with a Wright Cyclone 1,000 h.p. engine and capable of climbing over 5,000 feet a minute, underwent flight tests on March 20th at the St. Louis Airplane Division of the Curtiss-Wright Corporation factory. The first of a production order from a foreign government is, in the opinion of C. W. France, vice president, "The fastest climbing type of airplane in the United States as well as in the world". Commenting further, Mr. France pointed out that this type of military plane has proved it is much more effective than anti-aircraft batteries in combating high-flying enemy bombers because of its mobility and the rapidity with which it may be directed against an attack.

The Curtiss-Wright Interceptor-Fighter is a single-place, all-metal, highly streamlined monoplane, incorporating the latest military accessories including the C-W "Tell-Tale" system of instrument reading. It mounts four machine guns which are synchronized to fire through its propeller disc. In addition, the new fighter provides for complete radio equipment and high altitude operations requiring the use of oxygen. The landing gear, when retracted, is housed with faired doors.

The Interceptor-Fighter is smaller than the P-36 type or the Curtiss Hawk 75-A (used by the French Air Force) and is much lighter, weighing only 4,250 pounds loaded. While recognized principally for its rate of climb and maneuverability, it has a speed of well over 300 m.p.h., manufacturer states.

## G-200 CYCLONE RECEIVES ATC

THE light-weight 1,200 h.p. single-row Wright Cyclone G-200 has received Approved Type Certificate No. 219 from the Civil Aeronautics Authority. The 1,200 h.p. is developed at 2,500 r.p.m. for take-off. The engine weighs slightly more than a pound per horsepower.

In announcing the ATC, Arthur Nutt, vice president in charge of engineering for the Wright Aeronautical Corporation, said: "The G-200 has the same displacement of the Cyclone of 10 years ago but develops over twice the power and is lighter in weight per horsepower. Each of its cylinders produces over 130 h.p. Experimental research indicates that even at 1,200 h.p. the 9-cylinder single-row radial air-cooled engine has by no means reached its optimum reliable power output."

The engine features an all-metal main crankcase and the use of a double dynamic damper in the crankshaft. It also offers 24 per cent increase in cooling area and a cylinder bore finished to an accuracy of two-millionths of an inch (.000002") corresponding to the surface smoothness of Johansen gauge blocks. Although the engine has been installed in various military airplanes, the first commercial application of the power plant is being made in the fleet of DC-3 transports being delivered to Chicago and Southern Airlines.

## PESCO MASTER TEST STAND ASSEMBLY

THE Pesco Master Test Stand is designed expressly for testing various types of aircraft pumps and accessories at overhaul stations and repair depots. The stand embodies a work bench on which is rigidly mounted a fixture to accommodate installation of interchangeable adapters and couplings for driving practically all types of aircraft pumps and accessories. The adapter shafts are directly connected to an adjustable speed motor having a speed range from 100 to 4,200 r.p.m. It is designed for continuous operation for loads up to five h.p. and for intermittent or momentary loads up to ten h.p. A separate switch is provided to permit operation in either direction of rotation. The current supply for the adjustable speed motor is generated by an AC-DC Motor-Generator set which may be installed in any convenient location and which can be furnished to operate on three-phase, 60-cycle, 220-, 440-, or 550-volt alternating current circuits.

Accurately calibrated flowmeters, manometers, pressure gauges, vacuum gauges, ammeter, voltmeter, tachometer and multipoint pyrometer are mounted on the panels for measuring capacities, speeds, rates of flow, inlet suctions, discharge pressures, temperatures, etc., during tests. An oil supply tank with a sight gauge type of measuring device is

**CURTISS-WRIGHT INTERCEPTOR-FIGHTER**
Here is the first of a production order destined for a foreign government during flight tests at St. Louis with Willis Wells, C-W test pilot, at the controls. Powered by a 1,000-h.p. Cyclone, the Interceptor-Fighter weighs but 4,250 pounds loaded.

**PESCO MASTER TEST STAND ASSEMBLY**

**Practically every aircraft accessory and pump may be accurately tested on this compact test stand designed by the Pump Engineering Service Company for use at overhaul and repair shops.**

also provided to accurately indicate the lubricating oil consumption during tests of vacuum pumps. Further, the necessary equipment required for conveniently checking the performance of pumps and accessories under conditions simulating those actually encountered in service is provided. By the addition of suitable flow control and relief valves, various types of hydraulic cylinders also may be tested. Special adapters can be furnished for testing aircraft electrical generators and constant speed propeller governors.

In addition to the above features a source of direct current can be made available from the motor-generator set for testing, checking and battery charging by the installation of a separate double-throw, three-pole switch and suitable terminal posts. The bench assembly includes several storage bins and drawers and is of sufficient length to accommodate the installation of an additional test panel and additional instruments if desired. Storage tanks are provided in the space under the bench, one for hydraulic fluid, one for gasoline or mineral spirits and one to collect the oil from the vacuum pump discharge. Necessary valves are provided in the piping to obtain the required suction and pressure valves during tests.

## AERONCA TANDEM TRAINER

COMPLETE flight tests are now in progress at the Aeronautical Corporation of America Factory, Lunken Airport, Cincinnati, on the Company's new low-cost tandem trainer, available with either 50 or 65 horsepower engines.

Excellent visibility for both pilot and student, with the rear seat raised 5 inches higher than the front seat, should eliminate any chance for damage during taxiing. Large sliding windows give a total side range of visibility of 1,790 square inches, and provide draftless ventilation. Upward and backward visibility is also provided in the 19½ x 12½-inch skylight.

Cabin interior is spacious and well upholstered. The back of the front seat folds forward for easy access to the rear seat. Seats are of the adjustable parachute type, 24 inches wide in the rear and 16 inches wide in front. A forty-pound baggage compartment is aft of the rear seat.

Positive elevator control is gained by use of a push tube in direct connection with the stick. The fuel supply system includes a ten-gallon main tank with gravity flow to a small safety tank which is kept full at all times until supply is exhausted, thereby providing a good "fuel head" in any flight attitude except inverted flight.

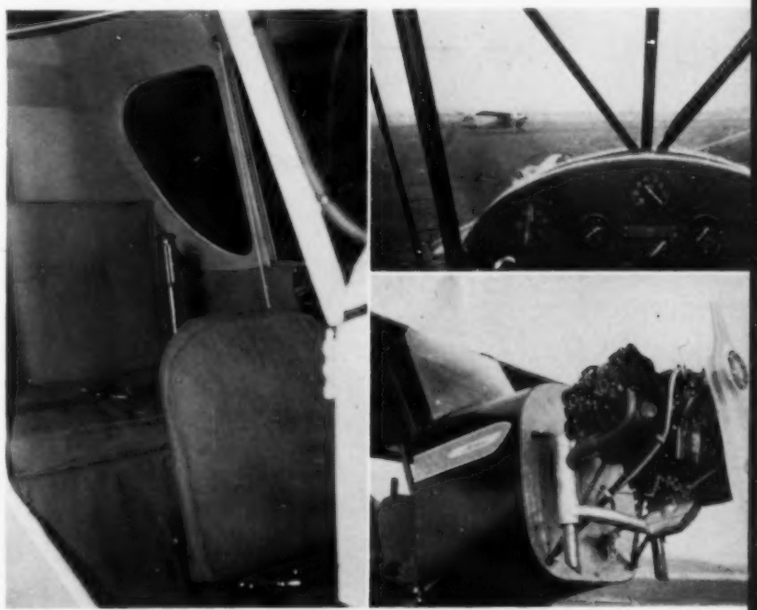
Fourteen removable inspection plates on fuselage and wing assure easy access for maintenance and inspection. Standard instruments offered with the model at no extra cost are the airspeed indicator, tachometer, oil pressure and oil temperature gauges, altimeter, fuel gauge, carburetor, heater controlled from cabin, one quart fire extinguisher, Shinn wheels and Firestone tires. The tandem trainer may also be equipped with extras such as brakes, tailwheel, wheel pants, etc.

SPECIFICATIONS:

| | |
|---|---|
| Span | 35′ 0″ |
| Length | 22′ 4″ |
| Height | 7′ 2″ (3-point position) |
| Height | 9′ 5″ (Level position) |
| Landing gear tread | 70″ |
| Wing Area | 169 sq. ft. |
| Wing loading | 6.8 lb. per sq. ft. |
| Power loading | 23.0 lb. per H.P. (50 H.P.) |
| Power loading | 17.7 lb. per H.P. (65 H.P.) |
| Baggage | 40 lb. |
| Useful load | 480 lb. |
| Gross weight | 1,150 lb. |
| Fuel | 12 gallons |
| Oil | 1 gallon |

PERFORMANCE (Standard Condition)

| | 50 Horsepower Models | 65 Horsepower Models |
|---|---|---|
| Maximum speed | 92 m.p.h. | 100 m.p.h. |
| Cruising speed | 82 m.p.h. | 90 m.p.h. |
| Landing speed | 35 m.p.h. | 35 m.p.h. |
| Service ceiling | 15,000 feet | 16,000 feet |
| Rate of climb | 500 ft. per min. | 600 ft. per min. |
| Range (cruising speed) | 250 miles | 250 miles |



**LEFT: Interior seating arrangement of the new Aeronca tandem trainer. Note the rear seat, which is five inches higher than the front seat for improved vision. TOP RIGHT: View of instrument panel, showing neat arrangement of primer, airspeed, oil temperature, tachometer and fuel shut-off valve. Note excellent visibility due to engine position while on ground. LOWER RIGHT: Showing engine mounts to be detachable for easy changes in installation. Engine shown is the Lycoming 50.**

## GUIBERSON A-1020 DIESEL

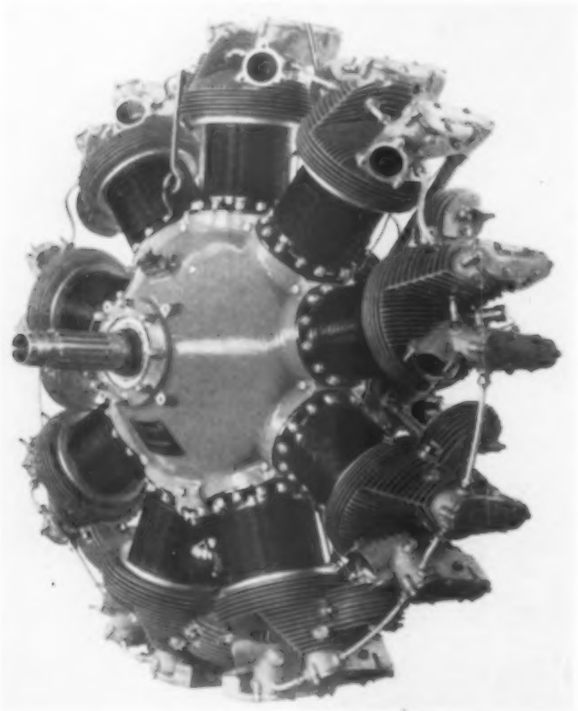
THE cumulative efforts of exhaustive research and constant development over a period of ten years at the Guiberson plant in Dallas, Texas, have reached a successful conclusion with the announcement that only a ten-hour flight test stands between final granting of an Approved Type Certificate to the Company's 310 horsepower aircraft Diesel engine. At the present writing the engine has passed its 100-hour manufacturer's test and its 50-hour official endurance test, and is now being mounted in a late model Stinson "Reliant" preparatory to flight tests during April.

Guiberson officials pointed out that the engine is a completely redesigned and simplified successor to previous Diesels produced by the Company in past years. In fact, simplicity of operation, installation and maintenance remains the outstanding characteristics of the engine. It can safely be termed the first modern aircraft Diesel engine produced in the United States.

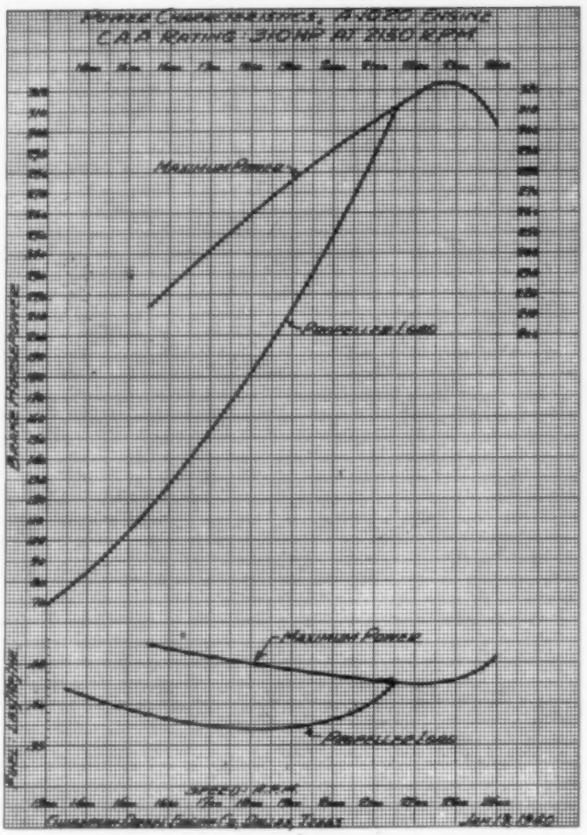
During the 50-hour official endurance test, with a lubricating oil circulation rate of 24 pounds per minute, the lubricating oil consumption of the engine was 2.57 pounds per hour, this consumption corresponding to a rate of .008 pounds per horsepower hour.

Operating at a compression ratio of 14:1, the engine boasted a rated power output of 310 horsepower at 2150 r.p.m. Fuel consumption is .425 pounds per horsepower hour at full rated power. The fuel consumption rate decreases to .37 pounds per horsepower hour at 1800 r.p.m. on propeller load.

As to size, the engine is 47⅛" in diameter and 33⅜" in length from end of crankshaft to end of fuel supply pump, thereby comparing favorably in size to conventional air-cooled radial gasoline engines of approximately the same power. In fact, the new Guiberson is a conventional 9-cylinder, air-cooled radial of the 4-cycle, 2-valve open combustion chamber type, in which an attempt was made to seek the greatest volumetric efficiency and



THE GUIBERSON 310-h.p. A-1020 AIRCRAFT DIESEL




Power characteristics of the Guiberson A-1020 Diesel engine developing 310 h.p. at 2150 r.p.m.

the highest mean-effective-pressure, thereby providing economical fuel consumption and easy starting characteristics even in cold weather. The bore is 5.125"; the stroke is 5.500"; and the displacement is 1021 cu. in.

Fuel injection is of the Guiberson vacuum type, comprised of nine individual fuel injection pumps which preclude the use of a governor or other complicated accessories. Simplicity and reliability are paramount features of the system. Fuel is injected by means of spring-loaded injectors which spray the fuel across the clearance space through triple orifice nozzles at a pressure of 3500 pounds per sq. inch. In full throttle operation, with the fuel injector pump plunger at the bottom of its stroke, the inlet port is opened and fuel flows into the barrel above the plunger, aided by the negative pressure created by the plunger's down stroke. Surplus fuel is forced out the inlet port on the upward stroke until it reaches cut-off position, at which time the inlet port is covered. Compression and injection follow, the plunger moving upward until it reaches the release position. The fuel then bypasses through a hole in the upper part of the plunger, coursing through an annular groove into the inlet channel; this event releases pressure and ends injection, the plunger finishing its stroke without further fuel action. In the closed throttle position, the inlet port is never uncovered; therefore, there is no injection with the throttle in this position. Throttling action is therefore accomplished by varying the uncovering of the inlet port opening from zero to a maximum.

The aluminum alloy crankcase is in two parts and supports the crankshaft in roller bearings with a ball thrust

*(Continued on page 18)*

# CURTISS-WRIGHT TRANSPORT

—AMERICA'S LARGEST TWIN-ENGINED AIRLINER

**MEMORANDA**

36 passengers
5200# Cargo
1500 mi. Range
over 240 m.p.h.

## with 2 Double-Row CYCLONE 14's

With the beginning of a new era of advanced development in air transportation, Curtiss-Wright introduces a commercial transport plane which embodies many features indicative of the constant refinement in aeronautical design. Two 1700 h.p. Wright Double-Row Cyclone 14's give the 36-passenger, 19 ton ship a top speed of more than 240 m.p.h., coupled with the simplicity and economy of operation of the Cyclone type.

Already well established in transoceanic service, the Wright Double-Row Cyclone 14 has borne out the Cyclone 9's reputation as the world's outstanding airline engine. The 1700 h.p. Wright Double-Row Cyclone, introduced with the Curtiss-Wright Transport, is a logical development of the original models of the type, which were brought out at 1500 h.p. in 1938, 1600 h.p. in 1939, and now with 1700 h.p. for the immediate future.

**WRIGHT AERONAUTICAL CORPORATION** · *A Division of Curtiss-Wright Corporation* · **PATERSON, NEW JERSEY**

**WRIGHT *Aircraft* ENGINES**

## NEW LUSCOMBE DISTRIBUTOR

• The Knox-Flite Company of Knoxville, Tennessee, was recently appointed distributor for Luscombe airplanes in eastern Tennessee and southeastern Kentucky.

## WHAT'S THE CEILING?

• A 65-horsepower Lycoming Taylorcraft belonging to Mr. Harry Rivers of El Paso, Texas, was used recently by the weather bureau for making an official weather flight.

Outfitted with the necessary instruments, the craft was climbed to an altitude of 17,000 feet above sea level in one hour and ten minutes. Mr. Rivers reported that while 200 revolutions were lost at 17,000 feet, the ship continued to climb and was apparently well under its absolute ceiling. The trip back to the airport required twenty minutes.

# MILITARY NOTES

## VINSON NAVY EXPANSION BILL

• By the vote of 302 to 57, the $654,000,000 Vinson Navy Expansion Bill passed the House of Representatives on March 11th. It authorizes three aircraft carriers, which would cost $141,000,000, raising to eleven the number now built, building or planned, the construction of 1,011 combat planes and fixes the upper limit for Navy aircraft at 4,500. Under the law as it stands, the Navy is directed to have a minimum of 3,000 planes by the end of the fiscal year of 1941. It has on hand or building 2,863. At the first of the year, the Navy had about 2,300 crafts of all sorts and the Army, 2,000. Since then, a few planes have been delivered. The Army's upper limit is 6,000, but only money to bring its craft to 5,500 has been appropriated.

## UNCLE SAM'S WAR ORDERS

• Much misunderstanding has arisen because of the action of the Joint Army and Navy Munitions Export Control Board in releasing to the Allies the Curtiss P-81A, which is like our Army's P-40 except for the armament installations, armour plating, bullet-proofing and fire-control equipment. The bare frame and the Allison engine of 1,100 horsepower were released individually some time ago, when the P-43 went into production. The P-81 is like the Curtiss Hawk 75A, except for the different type of engine. The Hawk is able to make 325 m.p.h.; while the 81A can do 35 miles an hour better, or 360 m.p.h. This speed puts the ship in a class slightly above the British Spitfire's and, more important, the German Messerschmidt's. The President called a conference of cabinet members, army and navy officials and technical men and they concluded that America has better craft than any turned over to the Europeans.

Congressional committees will get some details before the subject is closed.

• Arthur Nutt, vice president of the Wright Aeronautical Corporation, told attendants at the National Aeronautic Meeting of the Automotive Engineering Society, in Washington, that the 81A's would be obsolescent before they got to France and England and "We'll have something for the U. S. Army that can fly and fight rings around them."

The Allies are getting only a tenth of their fighting planes from us, according to Mr. Nutt. Germany, he believes, has just about half as many planes as she is reputed to possess. Russia has made great strides in the last 5 years and is building planes and engines after American models, even developing a water-cooled engine embodying the best features of several, but her engine is heavy and bulky and not as good as any of the others. His corporation has orders absorbing all its production for the next year and regards plant expansion to increase production with considerable wariness.

• Secretary Hull, of the State Department, declared that the moral embargo on the shipment of planes and aviation gasoline to Russia still stands.

• Norway is placing a $2,500,000 order for warcraft with the Northrop Aircraft Co. it is reported. The company will build 24 light patrol bombers, seaplanes of an advanced design. Norway is also expected to procure 13 light, single engine, attack monoplanes from the Douglas Aircraft Company.

• While the Spanish revolution was in progress German planes were reported to have dropped bombs containing something like liquid air on Barcelona, producing phenomenal destruction.

Lester P. Barlow, specialist in aerial bombs, and George B. Holder Air Reduction Corp., told the Senate Military Affairs Committee that they believed the German "secret weapon" to be this bomb and gave the chemical formula for making such a bomb with a content of liquid oxygen. The stenographic notes taken were ordered burned to prevent the secret from leaking out.

• Sweden has placed an order for 150 bombers, chiefly, but including some of the new fast pursuit interceptors manufactured by the Vultee Aircraft Co. The cost of the 150 planes will be $8,500,000. So far, Sweden has ordered 300 American fighting craft and spent about $20,000,000 here for planes and munitions.

# SCHEDULED AIR TRANSPORT

## AIRLINES COMPLETE YEAR OF SAFETY

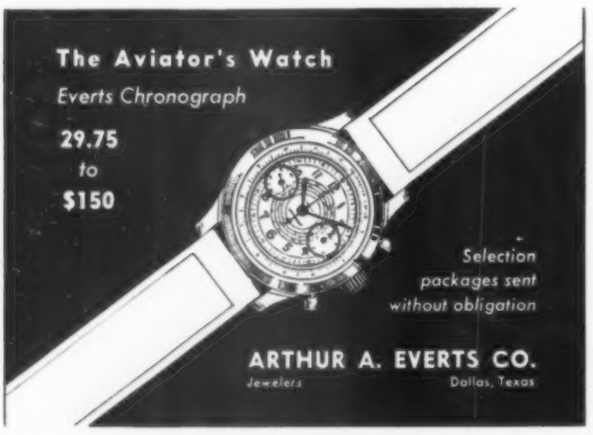
• A few minutes before 4:00 o'clock (EST) the domestic airlines of the United States completed an entire year of flying without fatal accident or serious injury to passenger, crew member or other person. During that period, according to an announcement by the CAA, the airlines also, for the first time, transported more than 2,000,000 in a twelve months' period. Airplane-miles flown totaled 87,325,145. Passenger-miles of travel amounted to 814,906,250. All these figures are new all-time records for any national airline system.

## NEW CAPITAL FINANCING BY BRANIFF

• Financing for new capital purposes by Braniff Airways, Inc., is represented by the major portion of an offering of 150,000 shares of the company's capital stock at a price of $10 per share. Of this total, 100,000 shares are for the account of the company, which serves the territory extending from the Great Lakes to the Gulf, and 50,000 shares for the account of T. E. Braniff, president of the company.

The company intends to apply the net proceeds from the sale of the 100,000 shares of common stock either to the payment of equipment obligations on four 21-passenger Douglas DC-3's, recently placed in service, or to the purchase of four additional airliners contracted for June delivery, with any balance to be added to the company's general funds. This would provide additional working capital for expenditures for increased facilities and operating requirements incident to an enlarged volume of business.

Braniff Airways is engaged in the commercial air transportation of passengers, mail and express over routes aggregating 2,453 miles, on which it schedules flights of more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than 11,000 miles daily. The present routes link Chicago and Kansas City with the Southwest and Texas. Through connection at Brownsville, Texas, with Pan American Airways, Mexico and Central and South America are linked with the 15 cities served. In addition to Chicago and Kansas City, these include Wichita, Oklahoma City, Dallas, Ft. Worth, Amarillo, Wichita Falls, Waco, Austin, Houston, Galveston, San Antonio, Corpus Christi and Brownsville. Effective April 1st, new schedules will increase daily miles to over 12,000.

The company has applied to the CAA for additional routes totaling 6,246 miles. Granting of the applications would substantially expand the system. Included are routes which will form a co-ordinated system throughout the Central West, between Atlanta and the Rocky Mountains and from the Gulf of Mexico north to the Twin Cities.

For the months of January and February, 1940, the company reports an increase of 64 per cent in gross passenger revenues over the corresponding months of 1939.

## REVENUE GAIN FOR UNITED

• United Air Lines earned a net income during 1939 of $322,121.49 after all charges, equivalent to 21.5 cents per share of outstanding stock, President W. A. Patterson has announced. The 1939 profit compares with a loss of $997,221.04 during 1938.

During 1939 United received both a National Safety Council Safety Award and the Aviation Maintenance Award. The company operated the entire year without a passenger or crew fatality or injury.

During the year United Air Lines placed equipment orders calling for seven new Mainliners for 1940 delivery and ten four-motored 42-passenger Super-Mainliners for 1941 delivery.

Highlights of United's activities during 1939 included a nation-wide demonstration tour of the new experimental Super-Mainliner which was flown to principal cities on its system and inspected by more than one million persons during the time the airplane was on public display.

The company's payroll in 1939 was 8.3 per cent more than in 1938, and a 36.8 per cent increase in revenue passenger miles was accomplished in 1939 over 1938 with only 2,275 employes during the peak month of September, 1939, as compared with 2,186 employes in the same month of 1938. A substantial increase in personnel is being made for 1940 to accommodate the expected sustained growth in passenger, mail, and express business.

## AMERICAN TRAFFIC UP

• Singing one of the lead parts in the joyful chorus which characterized reports from airline companies for January traffic was the American Airlines' statement indicating an average increase over all of its lines of 65.8 per cent for January, 1940, over the corresponding month of last year.

The Los Angeles-Eastern run was one of the leading branches of the system and exceeded the average with a 71 per cent increase for January, according to the statement of Charles A. Rhinestrom, vice president in charge of sales.

## TWA SHOWS GAIN

• In a report mailed to stockholders by TWA, a gain of approximately $1,700,000 in operating revenue for 1939 over 1938 was indicated, reducing the net loss for operations last year to $96,202 as compared with $702,056 for the previous year.

In commenting on the 1940 outlook, Jack Frye, president of the company, stated that with an increase of 43.2 per cent in 1939 back of them, with a program of expansion of their Eastern lines to provide feeder service and a much more extensive national direct flight service from Los Angeles, TWA should continue improving its position in the new year.

## AIR LINE ADDS OFFICE WORKERS

• Due to the large increase in the local passenger and mail business of Braniff Airways, Douglass Wood, Dallas traffic manager, has hired four new office employes to aid in the ticket reservation department of the airways. The new workers include Miss Juanita Harris, Miss Viola Langford, Miss Dorothy Lyday and Miss Faye Price.

# MISCELLANY

## NEW AVIATION DIRECTORY

• A complete and accurate compilation of aviation terms and data, cross-indexed for ready reference is now available in the "Aviation Directory and Reference Guide", by Harold E. Baughman. Prepared by an author with twenty years of experience in Aviation, in collaboration with a board of technical editors who are all active in aircraft construction or operation, this reference manual of 598 pages and 170 illustrations presents authentic information on many points about aircraft never before published in book form. Aero Publishers, Inc., Glendale, California, are the publishers.

## ANNUAL MEETING OF U. S. CHAMBER OF COMMERCE

• The 28th Annual Meeting of the Chamber of Commerce of the United States will be held in Washington, April 29th through May 2nd. This promises to be one of the biggest meetings of business ever held and surely one of the most important, with every section of the country and every branch of business and industry represented.

## MODEL CONTEST ANNOUNCED

• The Second Missouri State Model Contest will be held Sunday, June 16, 1940, at the Columbia, Missouri, Municipal Airport. This contest is sponsored by the State Junior Chamber of Commerce, under the direction of the Columbia Junior Chamber of Commerce.

This will be a Closed Missouri Meet and will be open to any Missourian of any age. There will be appropriate prizes and trophies. The public will be admitted free.

For additional information concerning this Contest, write to the Columbia Junior Chamber of Commerce.

## OKLAHOMA AIR TOUR

• The Aviation Club of Oklahoma City is sponsoring its Seventh Annual Air Tour leaving Oklahoma City on the morning of May 3, 1940, and ending at Ponca City on the evening of May 4th. These Annual Air Tours of the Aviation Club have always been the high spots each year in Oklahoma Aviation, and all of the various towns that will be visited have promised plenty of entertainment. Write to Moss Patterson, Chairman of the Air-Tour Committee, 410 West Noble, Oklahoma City, and tell him you are coming along. Don't delay as this information is important in making plans.

## NEW "QUIZ SYSTEM" BOOKS

• Two new books based on the "Quiz System" of questions and answers are now being offered to aid those who are preparing to take pilot examinations in all grades. The author is Charles A. Zweng, instructor, U. S. Army Air Corps, Glendale, California. By compiling the text in the form of pertinent questions that have been asked on various examinations, followed by the correct answer, the author believes that the pilot who will master the contents will have no difficulty in passing with a satisfactory grade.

The books are "Aeronautical Training", 1940 edition, covering pilot examinations in all grades; and "Instrument Flying", an Instructor Manual, fully covering all examination questions for Instrument Rating.

## SPARTAN APPOINTS DISTRIBUTOR

• W. Warren Holladay, sales manager of the Spartan Aircraft Company of Tulsa,, has just announced the appointment of Marshall Searle, of Los Angeles, as Spartan distributor for the State of California. Mr. Searle is purchasing a new Spartan "Executive" immediately, to be used as a demonstrator. It will be completely equipped with airline instruments, 2-way radio, and night flying equipment. Dealers will be established in various California cities, and Mr. Searle will welcome inquiries from all who may desire information about the "Executive".

Mr. Holladay announces that eight "Executive" sales have been made since the first of the year, totaling an approximate value of $200,000.

HUMBLE
HUMBLE AVIATION PRODUCTS
Reliable Flight Companions

# PORTS OF CALL

## Correspondence from the Airports and Airways

### Brownsville, Texas

**Air Holidays in Mexico Popular**

Mr. and Mrs. C. B. Orchard of Big Trails, Wyoming, recently left the snow country in their Cessna to visit Brownsville, Texas, with its palms and orange trees. From Brownsville they took off across the Rio Grande for a vacation trip to Tampico and Mexico City.

Pilot Ted Airheart with passengers Julio Marical, Capt. C. Lopez and Dr. C. W. de Guerre left in their Stinson from the Pan-American Airways base at Brownsville for Mexico City. Airheart hales from San Francisco.

Also leaving for the Mexican Capital was a vacation party consisting of Mr. and Mrs. H. M. Naylor, Mr. and Mrs. Don Jeeter, and pilot R. S. Lamont of Kansas City, Mo.

Wm. H. Connor, whose home is in Tampico, Mexico, came up to Kansas to purchase an Aeronca and fly it back.

Two Luscombes purchased from the factory and delivered to Brownsville by pilot King, were flown from the border city to Mexico by the new owner of one, J. dela Vega, and by pilot Enriques for the other owner, G. Guarjardo.

Chas. J. Tubbs and passenger F. M. Smith of Providence, R. I., are vacationing in the Mexican Capital. They are flying a Cub.

Jesus Otega and Jose Urquidi passed through this Pan-American Airways Western Division Base, each with a Travel Air, on their way to Central America to open a coffee freight line.

A Belfair Company Beechcraft from New York with pilot John L. Remmet and passengers Jack Schopenhauer and Mr. and Mrs. W. C. Langley left for a holiday in Mexico.

Mr. and Mrs. Russell Jarecki of Erie, Pa., in a Waco, and Norman F. Scott and pilot F. Hlavacek of Evanston, Ill., also in a Waco, followed the well-blazed trail to the beautiful capital of the Mexicans.—*T. C. PELIKAN.*

### Coffeyville, Kansas

**Aviation Club Is Breakfast Host**

The Aviation Club was host last Sunday morning at a breakfast for several out-of-town pilots. Most of the pilots were members of the Thunderbird Aviation Club from Ponca City, Okla. After breakfast the group was taken to a theater and shown an old time movie by Sid Caraway. The visiting pilots and planes from Ponca City were: Roy Hume—Stinson; Tom E. Smyer—Piper Cub; R. H. McNeice—Piper Cub; Lawrence Haskins—Taylorcraft; Roy McVay—Travel Air; Lee Haugen—Luscombe. Others were: Glenn McConnell, Parsons, Kansas—Aeronca; Ray Epperson, Bartlesville—Luscombe; Earl Haines, Arkansas City, Kansas—Piper Cub; Al Guthrie, Stillwater—Piper Cub; Archie McCunningham, Sedan—Aeronca; and Johnny Armstrong, Tulsa—Fairchild.

The visiting ships landed at the new Jensen Airport.

Art Inman has purchased a low-wing Stinson tri-motor from his brother, Rolley Inman.

Vernon Dorrell of Kansas City, vice president in charge of operations of Mid-Continent Airlines, was here recently to inspect the Coffeyville Municipal Airport. Mr. Dorrell flew here in a Waco.

Harry Weible has returned from Akron, Ohio, with a new Funk 75 which Hank Duncan has sold to F. C. Wentworth of Enid, Okla.

CAA Inspector Gordon B. Matthews of Kansas City, while here on his regular monthly visit, relicensed the C-3 Aeronca of Emery McConnell of Parsons; relicensed Hank Duncan's Monocoupe; issued a 2-S rating to Harry Weible; and gave Ray Sage his written for a commercial license.

Mr. and Mrs. H. L. Campbell and daughter, Virginia, chartered the Stinson Reliant of Marvin Fifcher of San Antonio, Texas, to return here quickly from San Antonio.

### Fort Worth, Texas

**Stinson Displayed at Stock Show**
**Fort Worth-Atlanta Service Gets Douglas DC-2's**

Roy Taylor, North Texas Aeronca distributor, whose salesroom on Meacham Field is a show place of the airport, recently returned from a sales trip and reports business is far ahead of last year. Mrs. Taylor holds down the office when Roy is out "on the road" with his new Demonstrator, and does a mighty good job of it.

Prior to the Stock Show, Les Bowman, Ft. Worth Stinson dealer, Mr. Rose and Mr. Sharp ferried three new 105 Stinsons from Springfield, Mo. Two were delivered to customers and one went to the "Fat Stock Show", the first time an airplane has been on display since 1931. Many, many comments were made upon this display, some saying it was better than the one at the New York Fair. Mr. Fuller says it was better as it was shown along with some of the best livestock in the world.

Jack West, Carl Barksdale, Tony McKays and C. Stewart have passed successfully the examination for Control Tower Operator. Artrur Courtney received his Junior License as Control Tower Operator.

Bill Garrett, who is manager of the Mangum, Oklahoma, airport, reports that in spite of the recent bad weather, business has been very good. Four airplanes have been sold and they have taken the agency for Porterfield with a new "50" as demonstrator. Dick Roberson has been added to the personnel. We are always glad to hear from our former coworkers and friends and welcome news wherever you are.

Delta Air Lines inaugurated service with 14-passenger Douglas DC-2's on March 15th between Fort Worth and Atlanta. The new planes replace the Lockheed Electra 10-passenger planes and represent a 40 per cent increase in carrying capacity.

At the present time the new planes are being operated only on the day schedules which leave Fort Worth at 9:00 a. m. and Atlanta at 8:40 a. m. On or about May 15th the Douglases will be placed on the night schedules which leave Fort Worth at 5:59 p. m. and Atlanta at 6:30 p. m.

The purchase of the new equipment was necessitated by increasing travel through the Southern States, according to Chas. P. Knecht, Fort Worth traffic manager for Delta.

—*MARGARET EWING.*

### Lafayette, Louisiana

**Louisiana Air Tour Planned**

The scheduled route for the Fourth Louisiana Air Tour is rapidly being completed. The tour is sponsored by the Louisiana Department of the NAA, the Louisiana Aeronautics Commission, the Evangline Chapter, and with the towns of Southwest Louisiana cooperating.

The itinerary: Gather at Shreveport, Wednesday, April 17th, where the Air Tour party will be guests of the Ark-La-Tex Chapter of the NAA. Thursday, April 18th, leave Shreveport 8:30 a. m.—arrive Arcadia 9:30; leave Arcadia 10:00 a. m.—arrive El Dorado, Ark., 11:30 a. m. for luncheon; leave El Dorado 1:00 p. m.—arrive Monroe, La., 3:00 p. m. where light refreshments will be served. Leave Monroe 3:30 p. m.—arrive Natchitoches to spend the night. Leave Natchitoches 9:30 a. m., April 20th—arrive Many 10 a. m. More light refreshments; leave Many 10:30 a. m.—arrive Eunice at noon for refueling; leave Eunice 1:30 p. m.—arrive Lafayette 2:00 p. m., where the gang will be honorees at a barbecue at Mayor Maxime Roy's camp, with evening entertainment at one of the clubs.

Saturday morning, April 20th, leave Lafayette for Baton Rouge at 10:00 a. m. and arriving for luncheon; leave Baton Rouge 2:30 p. m.—arrive Houma 4:00 p. m. Leave Houma 4:30 p. m.—arrive in New Orleans 5:30 p. m. as guests of the Harry P. Williams Chapter of the NAA at a dinner-dance. After that you are on your own, for the tour officially disbands and you may return home at your leisure. Come and help us make this one of the best air tours yet; and if you like our Southern hospitality, we know you will be with us again next year.

Lafayette is looking forward to a Teletype Station at the local airport in the near future. A lease between the CAA and the City of Lafayette was entered into this week and it was announced that active work on constructing the station will begin soon. Mayor Roy stated that five men will be employed regularly at the station at the airport. The Lafayette Airport is steadily being improved and we hope that before long regular transport stops will be made here.

Lieut. Glynn M. Jones of the CAA with headquarters in New York City is visiting here. Lieut. Jones is formerly of Lafayette.

Mrs. Fanny Leonpacher is in the hospital at present.

Capt. T. B. Herndon of Shreveport and Charlie Hutchinson were at the airport for a brief stop in a new Army plane.

Harry Watson, manager of the Lake Charles airport, was in on business recently.

Visiting pilots for this month were: Bob Dunbar, Earl Rich, H. L. Richardson, J. H. Clement, Geo. H. Echols, S. P. Gillery, Fam Taylor, Red Grey, J. J. Sutton, C. Walker, Raymond Kidd, R. R. DeVore, F. A. Dugan, A. R. Mounger, Eddie Ross, V. Bracher, R. A. Lyle, Bob Allen, H. F. Vincent, Ted Warren, Dug Langstaff, J. D. Reed, W. M. Camden, Rodgus, J. F. Stokes, H. F. Clark, Fed Colbert and W. Ramsey.

—*MRS. F. V. HUTCHINSON.*

### Mobile, Alabama

**Azalea Trail Attracts Many Visitors**

The column this month is devoted primarily to the fact that spring is officially here, and the beauty of Mobile at this particular time is unsurpassed anywhere in the country, in

this writer's opinion. Mobile's famous "Azalea Trail" is ablaze with color, and thousands of automobile tourists from all over the United States are following it. This writer has just returned from a trip to the Bellingrath Gardens, 15 miles south of Mobile, where he shot two rolls of movie color films, and any and all "Ports of Call" readers are welcome to view these shots along with about a hundred other rolls showing pictures of major airshows held throughout the country during the past five years. (Yes, we keep a small projector and screen right here at the airport.)

We invite all pilots who read this column to fly to Mobile and they can use our car to drive down to the gardens.

We have had a lot of visitors since the last column, including: Mr. and Mrs. Jess Hamilton of Charlotte, S. C.; Mr. and Mrs. Bob Lautte of Texaco; Mr. and Mrs. Zack Mosely, creator of the famous "Smilin' Jack" cartoon; Gus Ficken, smoke writer; and pilots Cheney and Dyche, with their Wasp-powered Fairchild, who have been making aerial maps here for the past week from ten thousand to fifteen thousand feet. (Nice work if you can get it.) And last, but not least, that human dynamo, Stedham Acker, Birmingham's airport manager, who promotes the greatest air show in the world from a sportsman pilot's viewpoint, accompanied by his wife and two children, and Mr. and Mrs. Bob Smith. For you readers who have never attended an air carnival at Birmingham, Bob owns the Rex Club, where last year this columnist almost started a riot by taking off his shoes, and which act started a shoe-removing ceremony by everyone on the dance floor, including Col. Roscoe Turner's number 15's.

Stedham has promised a bigger and better than ever air carnival this year, with a long list of beautiful girls competing for the title of Miss American Aviation for 1940, who are sponsored by the major air lines; a secret list of movie stars who have promised to attend; and a great gathering of stunt flyers including aces from Rumania and Cuba. All for the very low admission price of nothing flat.

In view of the fact that there will be no National Air Races in Cleveland this year, this should be the outstanding air show of the season. And remember that everything is free, including admission, transportation to and from the field, tie-down ropes and programs —which reminds me that this old gravel-throated editor will once again be at the microphone to tell you what's what and why, through the courtesy of National Airlines.

Things are booming here at the field. Oak Air Service has installed a lot of new equipment and are now able to completely major overhaul all types of aircraft. J. C. Davis has credit for being the first of the Springhill College students to make his cross-country solo flight. And a new 50 h. p. Continental Cub trainer has just arrived. Another addition to the airport family is Mr. John McQuillen, who has assumed duties as transportation agent for National Airlines.

With a high thin scattered to everybody, and a hope that you get to Birmingham on June 1 and 2, we will close the column for the month.—*DON H. STREMMEL.*

## Montgomery, Alabama

**Sportsman Pilots Entertained**

On March 15th, Montgomery entertained the Eastern Wing Rendezvous of the Sportsman Pilots' Association. Among those rendezvousing here were: Harold and Katherine Wood; Bud and that cute Mrs. Sommerville; Jack Burnham as co-pilot flying Bud's Stinson; Cass and Marge Hough; Earl and Hazel Ricks; Bill Lear; Mr. and Mrs. J. L. Hamilton; Chet and Mrs. Warrington; Tom Cole; Mr. and Mrs. Sargent and party; Bob and Mrs. Certel, accompanied by Daisy and Harry Kirkpatrick; Mr. and Mrs. A. D. Davis; Clare Bunch in his Monocoupe (about the size of a model, but how it seats); Bob and Petey Lautt accompanied by Zack (Smiling Jack); Mary Mosley; and last but not least, Judge and Alma Harwood. During the evening the visitors were entertained at cocktails, dinner and dancing. The next morning—off to New Orleans.

Montgomery was host to Harold Johnson and his National Air Show on March 31st. Among the outstanding flyers who took part were Capt. Alex Papana, the well known Rumanian Ace; Jimmie Granere and his comedy flight; Harold Johnson flying the Ford and also a Laird; Buddy Batzel making those breathtaking parachute jumps; and Don Walters really putting a Dart through the paces.

Eastern Air Lines will soon move into new quarters, second to none on the entire line at least in looks.

—*CHARLIE THIGPEN, JR.*

## 'ROUND ABOUT

**Marshall, Texas.** Bill Aechternacht has been appointed "Ports of Call" Correspondent in Marshall. He writes that Harold Beasley is the first student to make a solo flight from Marshall to Shreveport. Harold received his training through the CAA and the College of Marshall, with J. O. Womack, airport manager, instructing.

**Miami, Florida.** Bob Quin reports that three students of the University of Miami civilian training class of twenty were initiated into the ranks of private pilots, the first university students in the United States to complete their courses in seaplanes.

Their "initiations" conducted by Captain S. C. "Jiggs" Huffman, "dean" of the Embry-Riddle Flying School at Miami, were something more than the nod of approval of a CAA examiner. In covering the event, Miami newspapers proclaimed that "the precedent set will become a tradition to be carried on by classes to follow."

Captain Huffman, whose flying experience covers a period of more than 20 years, is proud of his fledglings and graduates. He expects to have his complete class through their final stages soon and says he will "match them with any college fliers in the country."


**Pilot-Owners Notice:**

***Announcing—***

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## NEW BOOKS

**(Quiz System)**

**"Aeronautical Training," 1940 edition covering PILOT EXAMINATIONS in all grades; includes Navigation, Meteorology, Civil Air Regulations and new teletype code for private pilots. $2.00 postpaid or C. O. D.**

**"Instrument Flying." An Instructor Manual, fully covering all examination questions for Instrument Rating, including Radio-Telephone. $4.00 postpaid or C. O. D.**

**QUIZ SYSTEM**

**Dept. S., 1435 Flower St.**
**Grand Central Air Terminal**
**Glendale, Calif.**

## From Shoestrings to Security

*(Continued from page 9)*

now operates three northbound and three southbound flights each day between Chicago and New Orleans, serving Springfield, St. Louis, Memphis, Greenwood, and Jackson. The new routes applied for would extend service from Memphis southwest to Houston by the way of Pine Bluff and Shreveport and northeast from Memphis to Louisville by way of Paducah and Evansville.

During 1939 Chicago and Southern Airlines flew 9,241,554 revenue passenger miles as compared with 6,895,319 revenue passenger miles in 1938, an increase of 34.3 per cent. Passenger miles flown during 1939 as compared with 1938 showed an increase of 22.68 per cent. The Company flew 1,768,668 miles in 1939 and 1,441,735 miles in 1938. Pound miles of mail carried during 1939 showed an increase of 42.91 per cent over 1938. Pound miles flown in 1939 totaled 192,459,984 as against 134,668,391 carried in 1938. Air express showed an increase of 33.81 per cent in 1939 as compared with the previous year. The Company flew 56,411,769 pound miles of express during 1939 as compared with 42,157,946 in 1938. The total number of passengers carried during 1939 as compared with 1938 showed an increase of 29.86. Actual figures reveal that the Company carried, during 1939 23,353 passengers as against 17,983 for 1938.

Little wonder that the "Valley Level Route" between New Orleans and Chicago demands larger airplanes and expanded facilities!

## New Equipment Review

*(Continued from page 12)*

bearing taking propeller thrust. The valve tappet guides and fuel injection pumps are located to the rear of the cylinder barrels. The heads of the cylinders are of aluminum alloy shrunk onto forged steel barrels. The valve seats are of Silcrome steel and aluminum bronze shrunk into the cylinder heads. Pistons are also of aluminum alloy with three compression rings and two oil rings, one above and one below the piston pin. The master rod is of H-section alloy steel, completely machined. Link rods are of I-section and are also completely machined. The single-throw crankshaft is of 5% nickel steel drilled for lightness and plugged to provide oil passages. The aluminum alloy accessory case is attached to the rear of the main crankcase and contains the accessory gear train. It carries the conventional gear type lubricating oil pressure pump, fuel supply pump, starter mounting, generator mounting, and general purpose accessory mounting. This general purpose accessory mounting may be used to mount a vacuum pump or a hydromatic constant-speed propeller governor.

Lubricating oil is applied under pressure to all drive bearings through drilled passages and through the crankshaft to the valve cam, the decompression plate, the knucklepin and crankpin bearings. The main roller bearings, cylinder walls, thrust bearings, piston pins, and fuel pump lifters are lubricated by the splash system. The lubricating oil is scavenged from a conventional sump and returned to the main oil tank.

The Guiberson Diesel Engine Company expects to display the engine in actual flight tests at the Practical Aircraft Demonstration Meet to be held in conjunction with the Third Annual Southwest Aviation Conference at Tulsa, April 25-28.

## PERSONAL NOTES

• OLIN E. BRAGG has been appointed as assistant to Robert J. Smith, Braniff Airways' vice president in charge of operations, it has been announced by T. E. Braniff, president of the airline. Bragg will assume his new duties immediately and will make his offices in Dallas at the Braniff operations base.

• Appointment of ALBERT C. REED to the position of Chief Test Pilot of Boeing Aircraft Company has been announced by Edmund T. Allen, Boeing Director of Flight and Research.

In announcing the appointment, Allen referred to Reed as "an outstanding example of the modern type of test pilot who is primarily an aerodynamicist and approaches test piloting with a thorough knowledge of airplane fundamentals."

• HARRY WOODHEAD, for the last thirteen years vice president and general manager of the Cleveland plant of the Truscon Steel Company, a subsidiary of Republic Steel Corporation, has been elected president of Aviation Manufacturing Corporation.

Mr. Woodhead has had a long and successful career in the industrial world, having been general manager and vice president of large industrial organizations in Canada, Birmingham, England, Milwaukee, Cleveland and Detroit.

• PAUL E. HOVGARD, veteran test pilot and engineer, has joined The Glenn L. Martin Company of Baltimore, as chief research engineer, it is announced by Glenn L. Martin, president. Mr. Hovgard succeeds JOHN B. WHEATLEY, who now assumes responsibility for the company's development work.

OLIN E. BRAGG

ALBERT C. REED

HARRY WOODHEAD

PAUL E. HOVGARD

## A PAYLOAD STAR *and a Pilot's Airplane, Too!*

The new Lodestar receives STAR billing with operators who use this 14-passenger Lockheed on regular schedules. Yet in the day-in day-out routine of steady operation it is delivering the airline job for which it was designed, carrying large payloads at speeds that lower ton-mile and seat-mile costs.

Naturally, operators value this kind of profitable performance. But that isn't all! Pilots who fly these great transports at cruising speeds well over 200 m.p.h., with full loads, say, "It's a pilot's airplane." New responsiveness, ease of control and stability…These are inherent Lockheed qualities that make the Lodestar a favorite not only with operators who own them, but with the men who fly them!

Lockheed Aircraft Corporation, Burbank, California

*Representatives Throughout The World*

LOOK TO *Lockheed* FOR LEADERSHIP

# One of LOCKHEED'S new SEWING MACHINES

Yes, that's what it is. But it doesn't sew fabric. It "sews" Alclad aluminum alloy by a continuous row of spot welds, automatically spaced and so perfectly overlapped that scientific stress analyses prove this smooth union superior to riveted seams for many purposes.

It's just one step in the fabrication of a Lockheed, but it's the result of months of collaboration between Federal Machine and Welding Co. experts, electrical designers and Lockheed's Engineering Dept.

Advanced airplanes demand these advanced manufacturing methods. A forward step, such as this, may cut the weight 2.3% and increase the strength of a number of the airplane parts. The sum total of all these small advantages makes the difference between just ordinary airplanes and Lockheeds.

Add up these improvements and you'll understand why airline operators the world over say—

*Model for Model*

**LOCKHEEDS** carry *greater* pay loads at *higher* speeds . . . at *lower* costs!

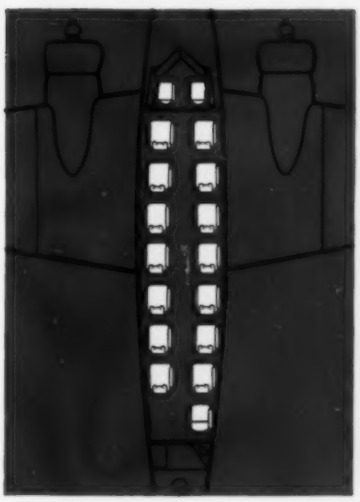
## CONTINENTAL goes LODESTAR, too!

Coronado spent torturous months on the "Trail of the Conquistadores" but today travelers of Denver, Colorado Springs, Pueblo, Santa Fe, Albuquerque and El Paso cover those same miles in luxurious minutes via Continental Air Line Lockheeds.

Proof of operator and passenger enthusiasm lies in the fact that three new fourteen passenger Lodestars have been placed in service on Continental's "Sun Trail" route.

*Here's why* ➡

Here's a Lodestar floor plan. ***Passengers*** like it because it gives them 747 cu. ft. of cabin luxury—53 cu. ft. for each individual. (Compare that spaciousness per passenger to other transports.) ***Stewardesses*** like it because newly designed equipment, compactly fitted in 60 cu. ft. of roominess, makes her duties easier. ***Pilots*** like it because it handles as easily as a small airplane. ***Operators*** like it because all these new comforts are combined with Lockheed's famous standards of high performance and profitable operation.



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## *Tomorrow flies in this new* LOCKHEED

Look into the future. Dream of every perfection in instrument improvement you can. Imagine controls as unimaginable as the Sperry Gyropilot was 15 years ago. Think of aerial navigation as simplified as reading an air speed dial.

And you may be certain that these steps into the future are undergoing research, NOW, in this Sperry Flying Laboratory. There's no other ship like it in the world.

It provides Sperry work-while-you-fly engineers with every facility for test-in-flight experiments. The interior is especially fitted as a work shop and recording office. Rapid-change instrument panels are a part of the design. Even a special turret for celestial observations is provided.

Although basically this is a standard Lockheed, its amazing adaptability makes it exactly the airplane for so highly specialized a job. That's one of the reasons that Lockheeds have so often been identified with unusual aviation projects.

Lockheed Aircraft Corporation, Burbank, California

*Representatives Throughout The World*

LOOK TO *Lockheed* FOR LEADERSHIP

Printed in U. S. A.

# TULSA'S AIRPORT IS TOPS

It is one of the few if not the only municipal airport in the nation to show an annual operating profit and does so because its primary function is service to air transportation

**FRANK E. BERNSEN**

Chairman, Aviation Committee, Tulsa Chamber of Commerce

BACK in '29 just as the roaring 20's were coming to a close a group of Tulsa's public-spirited men decided that their city needed an adequate airport. This group, composed of Waite Phillips, W. G. Skelly, Harry Tyrrell, Omer K. Benedict, Harry Rogers, Robert F. Garland and Cyrus Avery, formed the Tulsa Airport Corporation, put up their own money and built an airport that has always been from the beginning some 5 to 10 years ahead of most airports in facilities, planning and service. Foresight was in the saddle. Carefully laid plans became a reality.

Two years later the City of Tulsa, realizing the value of adequate airport facilities to future growth of the community, voted a bond issue of $650,000 and purchased the airport from the private Corporation. This figure represented the original amount invested by the group, and no additional funds have been required because, due to sound management, a net profit of some $38,000 has been realized from the operations, all of which, with the exception of a healthy cash balance, has been put back into the airport for improvements such as new runways, extension of runways, lighting, field grading, etc. In addition to the city's investment there is an additional private investment of over $1,000,000 on and adjacent to the field.

Major credit for the port's high place among the Nation's leading air fields must go to the Tulsa Park Board and to the manager, Charles W. Short, Jr. The Park Board is a non-political commission of five members appointed by the mayor for terms of one, two, three and four years' duration. Under their direction and through the management policies of Short, Tulsa's airport enjoys patronage far exceeding any airport whose city is in the same population category. In addition, it holds the highest rating granted by the Federal Government.

THE civic-minded, non-political governing board is a most important factor. Some years ago, a rambunctious mayor attempted to gain control of the field and put in one of his political supporters as manager. Everyone went up in arms—newspapers, airmen of the Nation and the leading citizens of Tulsa. Even the beloved Will Rogers wired from California that he didn't like to stick his nose in business that didn't concern him but he was "agin" the removal of Short, because under his management and the Park Board's direction, Tulsa had managed to build and maintain one of the finest airports in the Nation. The mayor lost his case and the airport has continued to prosper.

Hardly a day passes but that some town or city official writes in to find out how Tulsa operates its airport without a huge deficit. The answer is simple. The field gives service and with reasonable charges, consistent with the service rendered, a small profit is realized. Where does the income originate? Here's the approximate percentages:

*(Continued on page 38)*

A bird's-eye view of the Tulsa Municipal Airport showing the Administration Building, hangar facilities and the Spartan School of Aeronautics' quarters at the south end of the field.

# TULSA'S PRIVATE FLYING ALBUM

Host City, Southwest Aviation Conference, Oil Capital of the World, Aerial Gateway to the Southwest, Tulsa boasts the largest per capita ownership of private aircraft of any city of its size in the world.

**W. G. GREEN**

THERE'S no telling who did the first flying in or around Tulsa. However, it's certain that Duncan A. McIntyre (photograph No. 1 below) started commercial flying when he came here in 1919 after discharge from the Army. A barnstormer with a single dilapidated airplane, Duncan was ambitious and soon built an airport near the present municipal field. By 1923 he had moved to a location at Admiral and Sheridan Road where he constructed hangars and served a clientele owning 22 airplanes. Among the early users of private ships were Guido Piggott of Roxanna Petroleum Corporation, Vernon Brown, Hugh West and G. H. Hutchins, drilling contractors; Maurice F. Beene of Winona Oil Company; John Bach, H. R. Tucker of National Tank and Seal Company; W. M. Kinnley, a famous oil well fire-fighting engineer, and the Gas Engineering and Construction Company. From the very beginning it is evident that the petroleum industry was the airplane's best customer. Today that still holds true.

One of the first pilots for McIntyre was Tom D. Park. Tom is still flying charter work and spends much time in Tulsa. His picture appears in this album. Photos shown below are not complete, but highly representative of Tulsa's "Private Flying Family" both in variety of equipment and uses to which this equipment is put.

### IN THE PHOTOGRAPHS ON THIS PAGE

1—Duncan A. McIntyre. 2—John Armstrong, manager of Tulsa Commercial Airport, has for many years provided flight instruction and charter service in various ships owned by the airport company. He is also shown in photo 10 with his wife, Corrine. 3—Fred E. Cooper, distributor of Allis-Chalmers products, who operates a Lycoming Stinson for sales work and pleasure trips. 4—L. I. Dresser (right) of Dresser Engineering Company, owners of a Stinson flown by Gilmore Langworthy. 5—Park A. Holbert, electrical contractor, has been flying a Stinson formerly flown by Langworthy, and is building the only glider in Tulsa, a Bowlus sailplane. 6—G. C. Waller, head of the radio instruction and service department of Spartan School, designer of the well-known Waller Communicator, who flies a Taylorcraft. 7—Carl Porter of the Porter Mattress Company, who owns and operates a Stinson Reliant. 8—J. L. (Jimmy) Morris is one of Tulsa's outstanding lightplane enthusiasts. 9—Walter Lewis, who with Kenneth Burke, operates the Tulsa Flying Club at Commercial Airport and local repre-

sentative for Piper Cubs. 10—John and Corrine Armstrong of Commercial Airport. 11—Frank L. Jones with Mrs. Jones beside their Aeronca Cheif 50. Mrs. Jones is learning to fly. Frank flies regularly for Park Aerial Surveys. 12—A comparatively recent addition to the Tulsa flying fraternity is Kilburn E. Adams, who has been flying for ten years. He bases at Commercial Airport. 13—Stanley J. Ehlinger, well known advertising man, who operates a Stinson. He has flown his ship over 200,000 miles contacting his clients and his advertising agency affiliates located from coast to coast. 14—John C. Hillerman, who has a 40 h.p. Piper Cub, used primarily for pleasure flights. 15—Another Cub owner is R. L. Dalton, who is a private pilot and flies regularly. 16—Albert Phillips is another light plane enthusiast, flies a late model Taylorcraft. 17—Merrill Bills, Guy Polston and Marvin Sullenger, mechanical personnel of Tulsa's Commercial Airport. 18—Kenneth Burke, co-owner and operator of the Tulsa Flying Club shown beside his Company's Cub Trainer.

## IN THE PHOTOGRAPHS ON THIS PAGE

1—Clare Kingsbury, who flies a Stinson Reliant for Mr. E. F. Moran. 2—Largest commercial operator in Tulsa is the Spartan Institution. Here is Capt. Maxwell Balfour, school director, and Mr. A. F. Winn (right), vice president. 3—The fleet of four airplanes operated by executives of Seismograph Service Corporation and Engineering Laboratories, Inc. 4—John Funk, who owns and flies a Beechcraft both for business purposes and pleasure trips. 5—A. M. Horrall, major stockholder of the Commercial Airport and operator of Osage Construction Company, pipe-line contractors. He has been flying since 1926 and operates a 1940, 165 h.p., Cessna. 6—The Aero Exploration Company with Mr. Fred Casler as president, owns a fleet of four airplanes which are used in aerial photography work. 7—W. G. Green, president of Engineering Laboratories, owns and flies a 330 Jacobs Beechcraft. It is fully equipped for instrument and radio flying. 8—D. A. McIntyre flies a Lycoming Stinson for Taber and Coleman drilling contractors. 9—Mr. W. G. Skelly, president of Spartan School and Spartan factory, shown beside an "Executive" recently shipped to Iraq. 10—John C. Carroll, formerly chief instructor with the Spartan School of Aeronautics and lately captain on TWA, is now sales manager for Engineering Laboratories, Inc., and flies a Beechcraft operated by that company. 11—G. H. Westby, president of Seismograph Service Corporation, in addition to his use of the planes owned by that company, operates his own Ranger Fairchild on many business and pleasure trips. 12—J. H. Huff and Seismograph's Spartan "Executive". 13—E. H. Moore has, for several years, operated a Lockheed 12, flown by Tom D. Park, for business and pleasure purposes. 14—Ralph Hahn, of the R. L. Hahn Auto Supply Company, is the representative of the Porterfield Aircraft Company, and flies a Porterfield for business and pleasure purposes.

## NOT SHOWN IN THE PHOTOGRAPHS

Among local women pilots is Mrs. Gail Horrall, who has flown for many years. Mrs. Horrall flies with A. M. Horrall in his Cessna or in the Tulsa Commercial Airport Fairchild or Aeronca. Ralph Kistler has flown for several years from the Tulsa Commercial Airport and has been interested in student activity. Claude Drilling Company operates a Spartan "Executive" for business purposes. This ship is flown by Art Pavey. Lee Drilling Company, of Tulsa, operates a Spartan "Executive", flown by Henry Thompson. Olson Drilling Company operates a Spartan "Executive", flown by Russell Reeves. Loffland Brothers Drilling Company operates several ships, including a Lockheed 12, flown by Eddie Ross. Noble Drilling Company, of Tulsa, operates two Beechcrafts, flown by Art Oakley, of Ardmore, and Truman Wadlow, of Tulsa. Harry Hammill, of Austin, Texas, operates a Beechcraft in charter service, flown by Floyd Muncie of Tulsa. Charles Stewart, of Engineering Laboratories, Inc., and DeWitt Ross operate several small ships, including a Porterfield. Bethel Brace owns and flies a 1936 C-3 Aeronca for local pastime flying. Newman Wadlow, formerly with the Beech Aircraft Company, flies for Seismograph Service Corporation, giving student instruction in that Company's Stinson 105 to company employes, who will someday use airplanes instead of automobiles for transportation. Wilcox Oil and Gas Company owns a Jacobs Beechcraft, piloted by C. F. Gilchrist and used primarily in transporting company executive personnel. Parker Drilling Company operates a Spartan "Executive" in transporting their executives and personnel about the country. J. S. Kone flies a 40 Cub Coupe, 65 h.p., for business and pleasure. He is employed by Manning, Maxwell and Moore. Lucey Products Corporation until recently operated a Spartan "Executive", used largely by F. E. Bernsen, and piloted by Merrill Morgan.

# THE Sky's the Limit

BY BILL GREEN

Charlie has everybody's picture so here is his . . . Traveling Ambassadors for safety . . . Hats off to the maintenance men of the aviation industry

### Charles W. Short, Jr.

THE annals of all aviation are splashed with the names of great men and women who have been factors in the airplane's ascendancy to success. Without these immortal figures, and you all know their names, we doubt seriously if the airplane could have possibly reached its present high peak of development.

And then there are those figures whose names have not been splashed across the glorious record yet who, by their faith and energies, have had just as important part in the game as the Lindberghs, the Doolittles, the Earharts and the Turners. Such a character is Charlie Short, manager of the Tulsa Municipal Airport. No one figure in the Southwest has had such an impress on aeronautics as Charlie and it is most fitting that we open up this Tulsa Supplement in SOUTHERN FLIGHT with a few notes regarding him.

If you haven't already met him and received favors at his hand, you probably will some day. Year after year his host of friends increases and not a day passes but what some old friend drops in from the skies, perhaps miles off his route, to see and visit with Charlie. His airport for twelve years has been one of the best in the country—modern, clean and well maintained. Ye scribe has even heard airline passengers remark on that point.

We seriously doubt if any airport in the world actually has paid dividends on the original investment. However, for ten years or more the Tulsa Municipal Airport has not required any additional investment from the city and, in fact, has made enough operating profit to install numerous conveniences and additional equipment. Considering that the service has not been skimped in the least, that is quite a record.

C. W. Short, Jr., was born at Cincinnati, Ohio, on August 24th . . . ? . . . Charlie says that in that last eight or ten years he has forgotten somehow what year he was born in. He *thinks*, however, that it was about 30 years ago. He says that there have been no highlights in his life; that he has simply worked all the time. However, we personally know of a great many such highlights and know he has led a very eventful life. Charlie arrived in France on Christmas Day of 1917. For two years he attended aviation gunnery schools and missions. He says since that experience he has become increasingly interested in aviation. Now he has become almost a legendary figure.

Charlie is one of the most amiable people we have ever met, an excellent story teller and a swell fellow to travel with. He will do anything for his friends and, as we said before, has thousands of them. Of course, there are a great many swell chaps in aviation, possibly because of the very nature of the thing, but there is only one Charlie Short.

Since Charlie has almost everyone's picture on his office walls, and no one has his, we think it a good idea to give you one. There it is on the opposite page.

### Safety Again

THE recent safety records established by the airlines of the United States which total some 800,000,000 passenger miles without a single fatality, and which by now, must be somewhere near a billion passenger miles, has excited much favorable comment over the United States. We have heard it discussed at luncheons, dances, conventions, on trains, in offices and practically every other place people are want to go or congregate. People are well impressed with that safety record. We believe that an equally good record has been established by certain groups in commercial private flying. For example, in the ten years that we have lived in Tulsa, there has not been a fatal accident among the many oil companies and others using planes for business transportation operating from the various Tulsa fields. Three or four ships have nosed over, several have ground looped, a few have landed on flat tires or with wheels up and of course there have been the customary number of forced landings. In recent years with the improvement of airplanes, engines and pilots, even forced landings are rapidly disappearing.

We are pretty cautious ourselves, and a long time ago we decided that most hazards could be eliminated by observing a few very simple rules. Among these were no stunting at all, no bad weather flying, no considerable night flying, carry plenty of gasoline, keep ship, engine and radio equipment always in proper working order, observe all rules of the CAA. The latest issue of the Civil Aeronautics Journal points out that of 17 fatal accidents, four, or approximately one-fourth, were caused by novices carrying passengers. Since a solo pilot may not carry passengers under the law, it is evident that these four accidents could well have been avoided. Everyone of us should act as a traveling ambassador for more caution and sound judgment in this private flying business. There are now many people who will ride the airlines who will not ride in private ships. They must be taught that good pilots in good private ships are fully as safe as riding the airlines.

That these facts are being appreciated more and more is shown by the fact that every so often a new big customer for private aviation turns up. We have just learned that the Carter Oil Company, one of the large producing companies of Oklahoma, has just bought a Lockheed for executive transport. Most of the companies who own and operate aircraft for executive transport are finding that they are receiving many benefits therefrom in excess of the cost of ownership and operation. Especially among com-

*(Continued on page 38)*

# TULSA'S AIRLINES MAKE MONEY

Last year American and Mid-Continent turned down more business than they could accept, hence expansion that provides more schedules and larger equipment.

## I. Mid-Continent Airlines

IN June, the Great Plains Route steps out with new wings. For then Mid-Continent Airlines puts into service a shiny new fleet of Lockheed "Lodestars" over its route between Tulsa and Minneapolis through the parade of Mid-Western States, via Kansas City, Omaha, Sioux City and Huron. Fast, through schedules will be available north and south across the Mid-West at night for the first time, now that the route is completely equipped with lights.

Powered with 850 h.p. Pratt & Whitney Hornets that provide a cruising speed of from 210-220 miles per hour, the new Lockheeds in Mid-Continent service will be known as "Stateliners". With them, the Company hopes to take care of the heavy traffic demands that render its smaller Lockheed "Electra" fleet inadequate. The swifter "Stateliners", too, will reduce Mid-Continent's schedules considerably between the Oil Capital and the Twin Cities.

Expansion of its services also has brought to this fast-growing airline great increases in personnel and facilities. Mid-Continent's famous service policy, "A Crew of 52," in caring for its passengers already this year has added almost 50 persons to the Company's payrolls. To keep its new "Stateliners" always in "brand new" condition, Mid-Continent is expending $100,000 for new maintenance equipment, specially designed for the Lockheed Lodestar.

But, behind all this modern progress in air travel lies in most humble beginnings the fast-moving story of Mid-Continent Airlines.

STARTING with a tiny fleet of planes of almost every description, from old Ford Tri-Motors to single-engined Stearmans, Ryans and even a Sikorsky amphibian, the airline came into being in 1928 at Sioux City, Iowa, as Hanford's Tri-State Airlines.

The airline's earliest operations were largely charter flights and intermittent schedule flights from Omaha to Sioux City to Minneapolis and to Bismarck, N. D., until early 1934. The Company conducted a flying school, too, and is the alma mater of many of today's fliers.

Progressing steadily, the airline in the spring of 1934 bid for a contract to fly the air mail and in June was granted permission to operate air mail service from Chicago to Minneapolis and Winnipeg, Manitoba; and, over another route, now part of Mid-Continent's main system, from Minneapolis south to Sioux Falls, S. D.; Sioux City, Omaha and Kansas City, with an extension north from Sioux Falls to Huron, Aberdeen and Bismarck.

Equipment maintenance problems then made it necessary for the Company to move its base of operations to Minneapolis. The airline's headquarters remained there until shortly after the firm's air mail contract for the Chicago to Winnipeg service was sold. Hanford's Tri-State Airlines then moved back to Sioux City.

Concentrating on building the best in passenger service over its Kansas City, Omaha, Sioux City to Minneapolis and Bismarck schedules, Hanford added new flights with new Lockheed Vegas and Ford Tri-Motors, new radio aids to increase passenger safety.

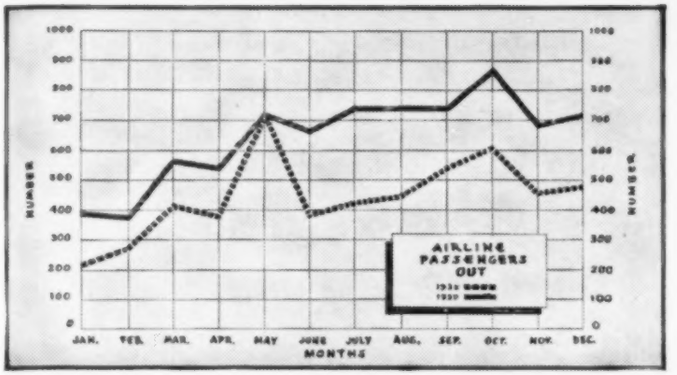
IN July, 1936, Thomas F. Ryan, III, became majority stockholder and executive vice president of the newly formed Hanford Airlines. Stepping forward immediately, the new company replaced all equipment with new 10-passenger twin-motored Lockheed Electras—the founders of today's accident-free safety record. New general offices were established at Kansas City, Missouri.

New executive personnel, headed by J. W. Miller, a pioneer in the air transport industry, as vice president and general manager, began streamlining the new company. In September of the same year, the airline took another forward step with expansion of its routes from Kansas City south to the Oil Capital—Tulsa.

In August, 1938, the Company name was changed to "Mid-Continent Airlines" in the belief that the new name more descriptively identifies the airline with the great Mid-western territory it serves.

Mid-Continent travelers, recognizing the value of their business time and the homelike comfort and convenience of air travel, have pushed the airline's traffic records steadily upward to an increase on June 30, 1939, of 423

One of Mid-Continent Air Lines' new Lockheed "Lodestars" which the company has christened "Stateliners" that go into service between Tulsa and Minneapolis on June 1.




**TULSA'S AIRLINE PASSENGERS EXCEL NATIONAL INCREASE**

**A total of 7,537 persons purchased airline transport passage out of Tulsa during 1939 as compared to 5,360 during 1938, or a 41 per cent increase. The above graph shows a comparison of the city's outgoing air passenger total for the last two years, with 1939 staying well ahead of 1938 except for the month of May when the Tenth International Petroleum Exposition was held in Tulsa. Despite the fact that Tulsa does not have adequate airline service from the standpoint of schedules and routes, the city has been able to exceed the national increase in air passenger travel.**

per cent in number of passengers carried over the same period of one year in 1935.

Looking to newer horizons, Mid-Continent Airlines is now awaiting approval by the Civil Aeronautics Authority of a Federal examiner's report recommending that the Company be awarded a certificate of convenience and necessity for operation of a new route between Minneapolis, Des Moines, Iowa and St. Louis, Mo., with intermediate stops at Ottumwa and Mason City, Iowa, and Quincy, Ill.; and between Des Moines and Kansas City. The Company will be prepared to begin operations over these new routes within 90 days from the date of approval by the Authority. Only a few days ago, the CAA gave its final approval to an examiners' report recommending Mid-Continent for permission to operate another route extension from Bismarck, N. D., to Minot, N. D.

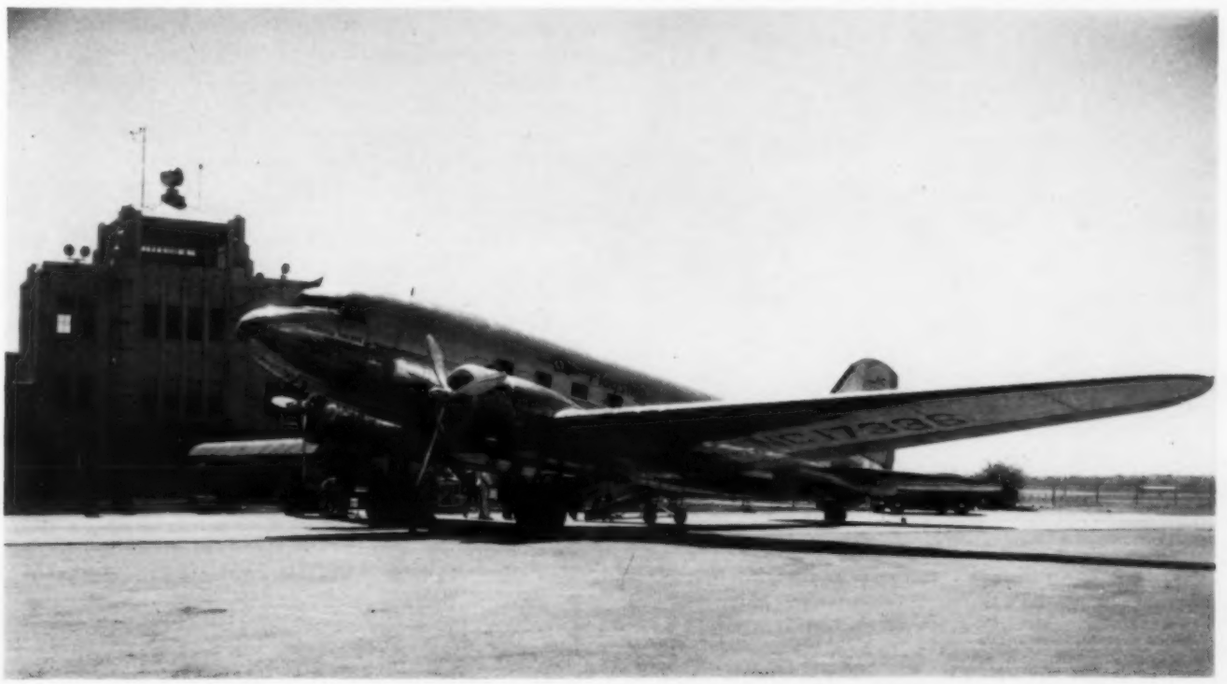
Mid-Continent also has applied to the CAA for a certificate of convenience to operate another new route south from the airline's present southern terminus at Tulsa to Muskogee, Okla.; Fort Smith, Ark.; Texarkana, Ark.; Baton Rouge, La.; Alexandria, La.; and New Orleans, La. Additional stops would be added at Bartlesville, Okla., and Joplin, Mo., on the Company's present route between Kansas City and Tulsa.

## II. American Airlines

LATE in 1934, after the air mail contract cancellation, American Airlines received the mail contract over AM 30, establishing Tulsa on a direct line between Dallas and Chicago. The company placed eight passenger, single-engined Vultee transports in service, the fastest airliners available at that time. It was not long, however, until the airline operators abandoned single-engined equipment and American placed Douglas DC-2's over the route. Business in Tulsa began to boom and today, after the humble beginning with the Vultee transports, American has replaced the DC-2's with 21-passenger DC-3's. Two schedules each way are operated daily and plans are now in progress for an additional schedule each way.

Even so, with more equipment affording eight times the seating capacity, airline travel originating in Tulsa surpasses the seats available. That is true all over the country. The only answer is in additional equipment and schedules.

Last year, American Airlines carried some 540,000 passengers. The company expects to carry at least 800,000 in 1940 and maintain its distinction as the nation's largest airline. Tulsa's share in this exceptional growth is considerable. For, as oil capital of the world and as aerial gateway to the Southwest, Tulsa and her progressive citizens will always be, as in the past, "sold" on air transportation.



An American Airlines "Flagship" in front of the Tulsa Municipal Airport Administration Building. There are two schedules each way between Chicago and Dallas with plans in progress for a third schedule within the near future.

# TULSA IS A TRAINING CENTER

A million dollar school in a million dollar climate is the largest contractor to the army air corps primary training program and has a unit of the civilian flight training program in addition to its regular commercial school activities.

**K. H. HOLMGREN**

YOU don't have to hail from Tulsa to know that the city boasts one of the outstanding flight training institutions in the world. Spartan School of Aeronautics was established on and adjacent to the Tulsa Municipal Airport twelve years ago by W. G. Skelly, president of the oil company bearing his name, who still maintains an active interest in the school and the Spartan factory in his capacity as president of both enterprises. Since its beginning, the school has grown steadily in equipment, facilities and scope of training offered to meet the increased needs of the industry.

At the present time, training is given to civilian students in the fields of flying, engineering, operations, radio and mechanics. It has the largest group of flying cadets and mechanics assigned to a civilian school by the United States Army Air Corps and is currently teaching flying to students of the University of Tulsa in conjunction with the Civil Aeronautics Authority civilian flight training program. The school occupies 17 modern buildings, having a total floor area of over 250,000 square feet. Instruction is given on five flying fields in the vicinity of the municipal airport.

Three elements—personnel, equipment and complete courses—are essential to the success of any high caliber Federally approved aeronautical training institution. Perhaps the most important is personnel. The vice president of Spartan Aircraft Company, of which the school is a division, is A. F. Winn. The school director is Captain Maxwell W. Balfour, who learned to fly with the Air Service in 1917. While in France, he served with two aerial observation units and finally with the 213th Pursuit Squadron. From the Armistice until October, 1924, he was attached to the American Embassy in Paris. He then returned to join the Fifth Observation Squadron at Mitchel Field, where he was assigned as Adjutant until 1929.

He had obtained the rank of Captain in the Army Air Corps when he retired from active duty. He is a graduate of Northwestern University and holds a commercial pilot certificate and instructor rating, and has more than 5,000 hours in the air to his credit.

A. W. Throgmorton is chief of ground school for military and civilian training programs. He holds a Bachelor of Science degree, is a graduate of the Air Corps Technical School in radio and a graduate of the Air Corps Weather School. He has had nine years' teaching and school administration experience.

The staff of 23 instructors working under his direction has been carefully selected from the viewpoints of experience and teaching skill. These men have been drawn from the commercial aviation industry, the Army, Navy and Marine Corps, outstanding universities and colleges and other leading aviation schools.

Julian Q. Myers is chief of the civilian school with ten years and 2,500 hours' flying experience, the majority of which has been in student instruction. He is assisted by Arthur Duske, Link Trainer instructor, M. D. Disney, Alfred Scarlata, James K. Crawford and Robert Thomas.

Spartan has the largest Air Corps Training Detachment of the nine civilian schools selected to train flying cadets. Fifty-one airplanes have been assigned to the school for this work. A total of 30 flight instructors devote their full time to teaching the 170 to 200 flying cadets in attendance. Responsible for this phase of Spartan training actively is J. L. Gentry, who learned to fly in 1928. He is a graduate of the Air Corps Training Center and spent three years with the 55th Pursuit Squadron and two years as an instructor at Randolph before coming to Spartan. His flight instructors are all thoroughly experienced men, their flying time ranging up to 7,000 hours. The average age is 30 years. To date the Spartan Air Corps Training Detachment has logged 22,000 hours of flight instruction without a casualty or serious injury to students or personnel.

EQUIPMENT is the second important element of a successful school. Three modern hangars house administration offices, shelter for the 66 airplanes used in commercial and military flight training, maintenance shops, stock rooms, Approved Repair Station, airplane shop, propeller shop, design and drafting room, parachute shop, hydraulic laboratory, medical laboratory, instructor's offices, and recreation hall.

A large brick classroom building contains a three-room radio laboratory, radio code room, engine shop, sheet metal shop, welding shop, instrument laboratory, instrument flight trainer room, and two lecture rooms. Adjacent to this building is an engine test house with facilities for testing four large engines simultaneously. Three additional test stands are located nearby.

The fuel and oil laboratory is equipped to run all tests on fuels and oils, such as viscosity residue and distillation. Also included for study are numerous sizes and types of carburetors and fuel and oil pumps.

The electrical laboratory occupies 2,500 square feet. It is equipped with a complete supply of generators, starters, magnetos, and testing apparatus for the study of ignition and electrical systems.

Seven dormitory buildings having a capacity of 350 students are owned and maintained by Spartan School. They are well equipped with study facilities and for comfortable living. Students enjoy living in the center of aviation activity.

The courses offered to civilian students have been designed to meet commercial industry requirements in each field. They were not outlined in a haphazard manner, but only after careful consideration of all factors involved.

Flying courses now offered are the Air Transport Pilot Course of 24 months' duration, 18-month Commercial Pilot, 12-month Commercial Pilot and Mechanics, Instructor Rating, Instrument Rating, and Private Pilot. Ground courses are the two-year Aeronautical Engineering and Maintenance Engineering Courses, 18-month Air Transport Operations Course, 15-month Airline Service Mechanic, 12-month Aircraft or Engine Mechanic, Air Transport Communications Course of the same duration, and special 12-week Aircraft Factory Mechanic Course.

High school graduates may qualify for copilot positions on the airlines by taking the extensive Air Transport Pilot Course which includes 300 hours of flying, 1,282 hours

in classroom studies, and 2,446 hours of laboratory and shop work. Flying time is taken from shop periods. Students having two years college may meet airline requirements and become copilots in 18 months by graduating from the Commercial Pilot Course and Instrument Rating Course. Upon completion, the student will hold a Commercial Pilot Certificate with an Instrument Rating, Restricted Radio Telephone license, and the Aircraft and Engine Mechanic Ratings issued by the Civil Aeronautics Authority.

THE demand today for copilots is greater than it has been at any time in the history of the aviation industry. New routes are being opened. New schedules are being added. With the military services retaining pilots because of their own increased needs, the airlines are turning to the better civilian schools for new men. It is estimated that 2,400 new copilots will be needed by the airlines during the next three years.

The airline pilot of today must have a technical understanding of airline operation, airway procedure, air transport equipment, meteorology, and navigation. For this reason, both the Air Transport Pilot and Commercial Pilot Courses include comprehensive ground instruction. A pilot so trained should be able to look toward the future with confidence and know that he may grow with his company and the aviation industry.

Flight training is given in progressive stages on seven different types of airplanes, ranging from 50 to 450 horsepower.

Spartan School, as a division of the Spartan Aircraft Company which builds the famed Executive, is in a unique position to give training for the aeronautical engineering field. Consequently, a 24-month Aeronautical Engineering Course is offered which includes 1,282 hours of lecture, and 2,410 hours of laboratory and shop. Students are prepared for their careers by knowledge and experience acquired in School facilities and then are given an opportunity to apply the results of that training under actual working conditions. Production and engineering experience in the factory are given during the final quarter of the Aeronautical Engineering Course.

The Airline Maintenance Engineering Course has been developed to equip students technically and practically for this field. Larger airplanes and more powerful engines are being constantly brought into use. To them have been added the newest accessories, navigation equipment, and communications equipment. The combination of all these elements has given rise to maintenance problems that cannot be handled by the ordinary mechanic.

Not quite as comprehensive in scope, but yet quite complete in training men for employment and advancement in airline operations work, is the 18-month Air Transport Operations Course. The first four quarters of this course are devoted to such background subjects as mathematics, aviation mechanics, construction materials, airplane engines, aviation electricity, drafting, airplane shop, instruments, aerodynamics, welding, navigation, meteorology, sheet metal shop, fundamentals of speech and writing, metallurgy, and aircraft service.

During the final six months, intensive training is given in practical airplane mechanics and aircraft engines. This work prepares students for both the Aircraft Mechanic Rating and the Aircraft Engine Mechanic Rating issued by the Civil Aeronautics Authority. Actual engine and airplane overhaul experience is given in the Spartan Approved Repair Station the sixth quarter.

*(Continued on page 36)*

TOP TO BOTTOM: (1) Cross-country students going over their maps and final instructions on the navigation problem for the day; (2) Campus scene at Spartan School, showing a portion of the modern barracks and classrooms; (3) Engine shop in which thirty engines are used for instruction, including the two Pratt & Whitney Twin Wasps shown in foreground; (4) Twenty-eight of the thirty instructors employed at Spartan to train U. S. Army Air Corps flying cadets, with J. L. Gentry, center first row, chief military flight instructor.

Specializing in Oil
NATIONAL BANK OF TULSA
MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

# To better serve the Oil Industry

Seismograph Service Corporation and its affiliate, Engineering Laboratories, Inc., are recognized as leaders in the development of special techniques for the solving of complex geological problems and the design and manufacture of specialized equipment for use in the geological field and the petroleum production industry.

Availability of S S C's services and E L I's equipment is uniform despite geographic locations. A fleet of four modern airplanes is maintained for the use of executive, sales, and service personnel.

**Seismograph Service Corporation**
Kennedy Building
TULSA . . . . OKLAHOMA

**Engineering Laboratories, Inc.**
620 E. 4th Street
TULSA . . . . OKLAHOMA

"My Company, Public Service Company of Oklahoma, is proud to serve the Tulsa Airport."

"Depend upon me," says Reddy Kilowatt, your electrical servant, "I'll help you land with light service that you can depend upon."

# AN OPPORTUNITY

## *for the* YOUNG MEN OF AMERICA

IF you are an American Citizen between the ages of 20 and 27, unmarried, of excellent character and sound physique, with one-half the credits necessary for graduation from a four-year course of a recognized college (or can pass an examination covering subjects equivalent to this college work), there's a place for you in the U. S. Army Air Corps.

You are paid while learning to fly under the nation's most competent instructors in the Army's finest training planes. Board and room, medical and dental care and all equipment are furnished to Uncle Sam's Flying Cadets.

The course consists of three months primary training, followed by three months at Randolph Field—"West Point of the Air"—then to Kelly Field, San Antonio, for graduation and reserve commission as Second Lieutenant.

IN THE SOUTHWEST APPLY:

## SPARTAN AIR CORPS TRAINING DETACHMENT

**Spartan School of Aeronautics - - - - - - - - - - - - - - - - - - - - Tulsa, Oklahoma**

**Elsewhere: Any U. S. Army Recruiting Office, Or To The Adjutant General, Washington, D. C.**

# TULSA'S AIRCRAFT FACTORY

With emphasis on the all-metal Wasp powered "Executive," the Spartan Aircraft Company is expanding, looking toward military and export business for increased production.

**WARREN HOLLADAY**

AFTER a period of slowed down operation as a result of the depression, the Spartan Aircraft Company, Tulsa's only aircraft manufacturing plant, is now pursuing under the direction of W. G. Skelly, president, a vigorous expansion program. This plan includes the purchase and installation of latest type manufacturing equipment, the building up of a corps of trained and experienced personnel and the development of new designs commensurate with modern demands, as well as constant improvement of its present production model, the well-known "Executive". A large part of the credit for the aggressive effort to achieve a high place in the aeronautical manufacturing field goes to A. F. Winn, Spartan vice president and general manager.

Sales activities of the Company during the past twelve months include the sale of ten "Executives" at an average price of $24,000 each, three demonstrators and miscellaneous trade-ins. Spartan's 1940 sales of the "Executive" have been so gratifying that the largest production order ever placed in the factory has just been issued.

The engineering department, under the able guidance of E. O. Weining, chief engineer, has finished the development of a military type primary trainer known as the NS-1. Although completed too late to be tested prior to the opening of Army bids last summer, this ship has since been flight tested by both the Army and Navy. It is hoped that an opportunity to bid on a similar contract will be presented sometime during the current year.

THE Spartan NS-1 Trainer is now ready for production. It is a two-place tandem biplane with a wing spread of 33 feet, 8⅜ inches, a height of 9 feet, 4¾ inches and a length of 24 feet, 7¾ inches. Empty weight is 2,080 pounds, useful load 720 pounds and gross weight 2,800 pounds.

Powered with the Lycoming R-680-7 engine rated at 220 h.p. the NS-1 is ruggedly constructed for hard service. The fuselage is a conventional welded steel structure, fabric covered aft of the rear cockpit and conforms to the structural requirements of the Army Air Corps and U. S. Navy Bureau of Aeronautics. The wing consists of laminated spruce spars, spruce ribs and drag struts, fabric covered. Interplane and cabane struts are of streamlined steel tubing, while ailerons are of riveted aluminum alloy with fabric covering. The fin and stablizer are of stressed skin aluminum alloy and the elevator rudder are of fabric covered riveted dural frame work. A single tab controllable from the cockpit provides horizontal trim. Landing gear is of the split axle oleo type equipped with oleo shock absorbers.

Although "Executive" production has been considerably increased, the new factory machinery installed in the plant and the unused floor space will permit the acceptance of additional work and production should they be available.

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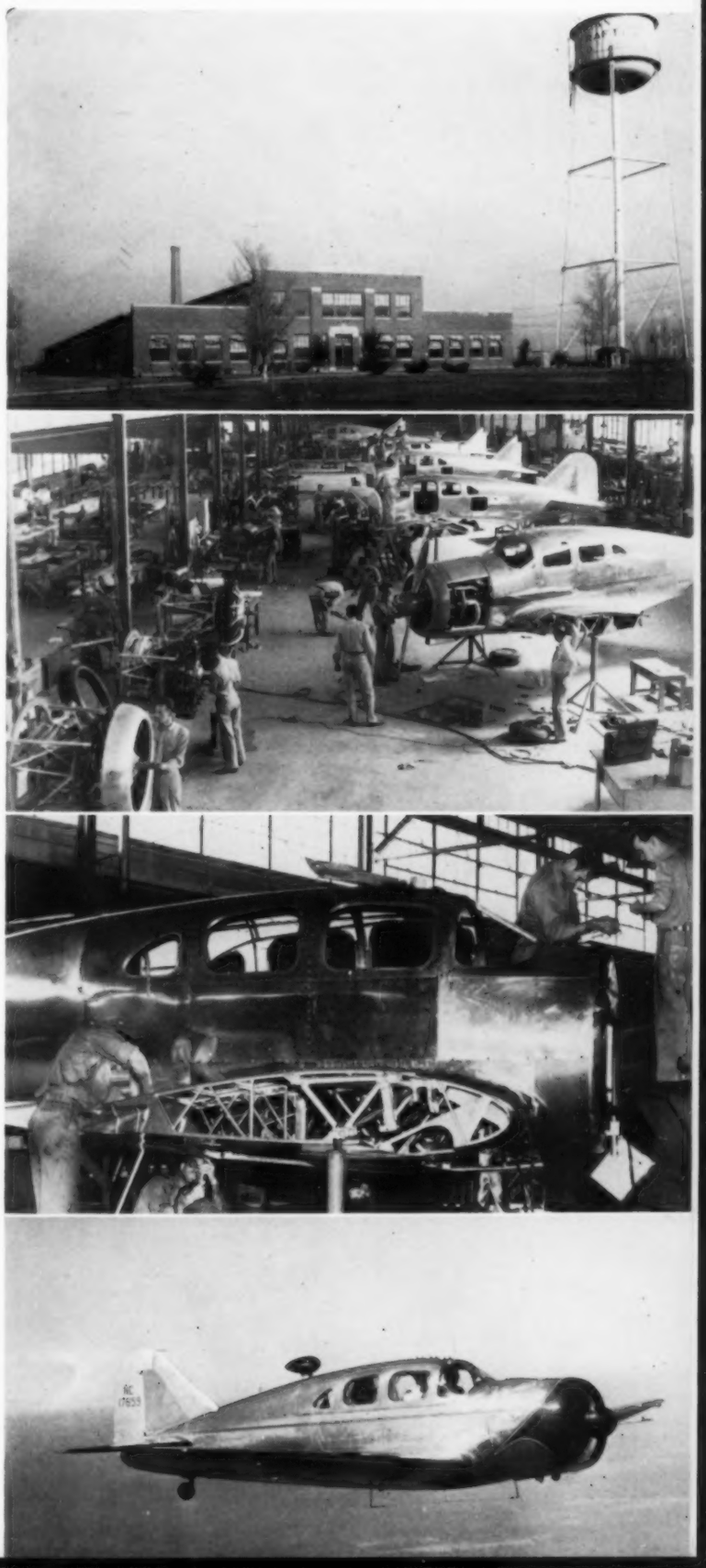

TOP TO BOTTOM: (1) Spartan Aircraft Company factory near the Tulsa Municipal Airport; (2) Interior of factory, showing Spartan "Executives" on production line; (3) Final assembly of an "Executive," the company's leading production model; (4) An "Executive" in flight over northern Oklahoma.

## Spartan School

*(Continued from page 31)*

ONE of the most important personnel shortage problems facing the aviation industry today is the lack of trained radio technicians. The demand for Spartan-trained operators, men thoroughly schooled in the construction, overhaul, repair and service of transmitters and receivers, and installation men has exceeded the number of radio course graduates available since 1936.

The Air Transport Communications Course at Spartan School trains men for the above positions in a period of twelve months. It is a specialized course in aviation radio. The equipment provided for student instruction is valued at $16,000, and among the finest to be found in any school in the United States. The student begins with the basic fundamentals and continues until he is able to build and service complicated equipment. The first six months trains for the Commercial Radiotelephone License while the last six qualifies the student to take examinations for the Commercial Telegraph License.

Candidates who desire to obtain both mechanic ratings in the shortest possible time give consideration to the Airline Service Mechanic Course which takes 15 months to complete. Graduates qualify for airline employment at terminal points and do inspection, repair, and maintenance work on transport airplanes and engines.

The 12-month Aircraft or Engine Mechanic Course qualifies students for either the Aircraft Mechanic Rating or Aircraft Engine Mechanic Rating. All time spent in Spartan School is counted as experience toward these certificates. The course includes more than the minimum required knowledge and experience, thus insuring graduates of a complete background in aircraft or engine mechanic work.

The aircraft factories are demanding thousands of men skilled in sheet metal construction, riveting, forming, layout, and assembly work. Spartan School now offers a specialized course in this field, lasting for a period of twelve weeks. Practical projects are undertaken in the sheet metal shop to develop skill in the above types of work. New classes begin each Monday morning.

A great deal has been written concerning the training of Air Corps flying cadets and mechanics at the civilian aviation schools. On July 1, 1939, Spartan School began the training of flying cadets for the Army Air Corps. Eighty-six to one hundred cadets enter every six weeks and remain for a period of twelve weeks. During this time they are given 65 hours of primary flight training and a complete ground school course. Those who make satisfactory progress in the work are sent to Randolph Field for further training.

The total number of Air Corps mechanics in attendance at Spartan School at one time is eighty. The mechanics are under Spartan tutelage for a full 28-week period, studying the maintenance and inspection of airplanes, engines and their accessories. The selection of both the flying cadets and mechanics is made by the Air Corps.

The acceptance of this program has not diminished the attention given to civilian students. On the other hand, it has given Spartan the impetus and the equipment to make it one of the finest aviation schools in the United States.


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★ 1 *Daily Round Trip between Houston and Corpus Christi.*

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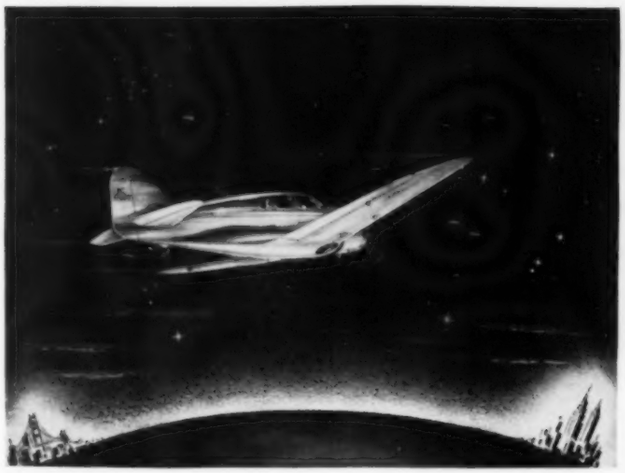

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## Sky's the Limit

*(Continued from page 26)*

panies requiring skilled executive personnel, one executive is able to do the work of three or four who do not use airplanes. Airline schedules and routes are still not satisfactory over many points in the great Southwest. We therefore must resort to ownership of our own planes, in order to derive the greatest saving of time.

### Maintenance Men

THE actual unsung heroes in aviation today are the host of mechanics and maintenance men who seldom, if ever, leave the ground. The safety records established over the years are at least 75 per cent due to these men. They work untiringly, often with insufficient rest and pay. A good mechanic is a jewel, and personally we have the highest respect for them. In tight places, we have frequently given thanks to the powers that be for the carefulness of our mechanics. Among these obscure but vitally important chaps, we have frequently felt thankful to Guy Polston, chief mechanic at the Tulsa Commercial Airport. Guy has taken care of our various ships for several years, and in that length of time, we have had no forced landings in any way attributed to him. I personally have never had a forced landing from mechanical difficulties other than once when I lost a tip from the prop. In spite of the fact there are some 35 airplanes operating from the Tulsa Commercial Airport, Guy and his assistants work so carefully that forced landings are front page news, they occur so seldom. To all mechanics, we say, "*Keep it up*, gang, your work is well done and gratefully appreciated."

We will see you at the Southwest Aviation Conference April 25, 26 and 27.

TEXACO

REG. T.M.

**TEXACO**

AVIATION PRODUCTS

THE TEXAS COMPANY

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## Spartan Factory

*(Continued from page 35)*

This new work may be either trainer production or construction of sub-assemblies for other manufacturers. In the event volume of business justifies it, the plant can and will be enlarged to whatever size required to handle orders. Tentative plans have already been drawn up and developed, with construction bids received.

The Company plans to inaugurate an aggressive sales-campaign along with increased production of its Wasp powered, low-wing, all-metal monoplane. It is also interested in development of various military type aircraft both for the United States and for foreign markets.

The present factory personnel includes, in addition to those mentioned, the following men: H. Warren Holladay, sales manager; Ralph W. Kenyon, factory manager; James Lew, production engineer; F. J. Tolley, shop superintendent; Russell J. Weber, purchasing agent.

## Tulsa's Airport

*(Continued from page 23)*

| | |
|---|---|
| Gasoline and oil sales | 48% |
| Field income—operations charges | 30% |
| Hangar income | 15% |
| Office rents | 5% |
| Concessions and miscellaneous | 2% |

Approximately 100 airplanes are stored nightly on the airport. These ships will generally represent an investment of over $500,000. At the present time hangar space, as on many other airports, is quite a problem and construction of an additional hangar is under advisement.

SOMETHING of the heavy traffic on and off the field may be gained from the following figures, which include some 58,000 ships landing and taking-off during 1939, with approximately 154,000 persons aboard. The airlines account for 2,800, private owner ships 9,400, Spartan School 10,800 and military aircraft of the U. S. services, 35,000. Since construction of the present facilities almost a million people have landed and taken off in over 233,000 airplanes without a major injury to a single person.

Tulsa, as undisputed "oil capital of the world", with the petroleum industry providing the largest customer group in commercial aviation, feels that it could support several times the number of airline schedules now operating by the two companies serving the city. New routes radiating out from the city and connecting Tulsa with other main-line travel and other sections of the Nation are sorely needed. Applications by several airlines are before the Civil Aeronautics Authority at this writing. If and when these applications for certificates of convenience and necessity are granted the operators, Tulsa's airport will be ready to serve them and Tulsa's citizens ready to patronize them.

Additionally, Tulsa citizens are well aware of the great progress and unprecedented increase in non-scheduled civil aviation and in military operations now going on. The conviction that Tulsa will always keep up with aviation progress is best illustrated by her past performances in this regard; for her citizens aren't satisfied to keep up—they are the kind that want to stay ahead.

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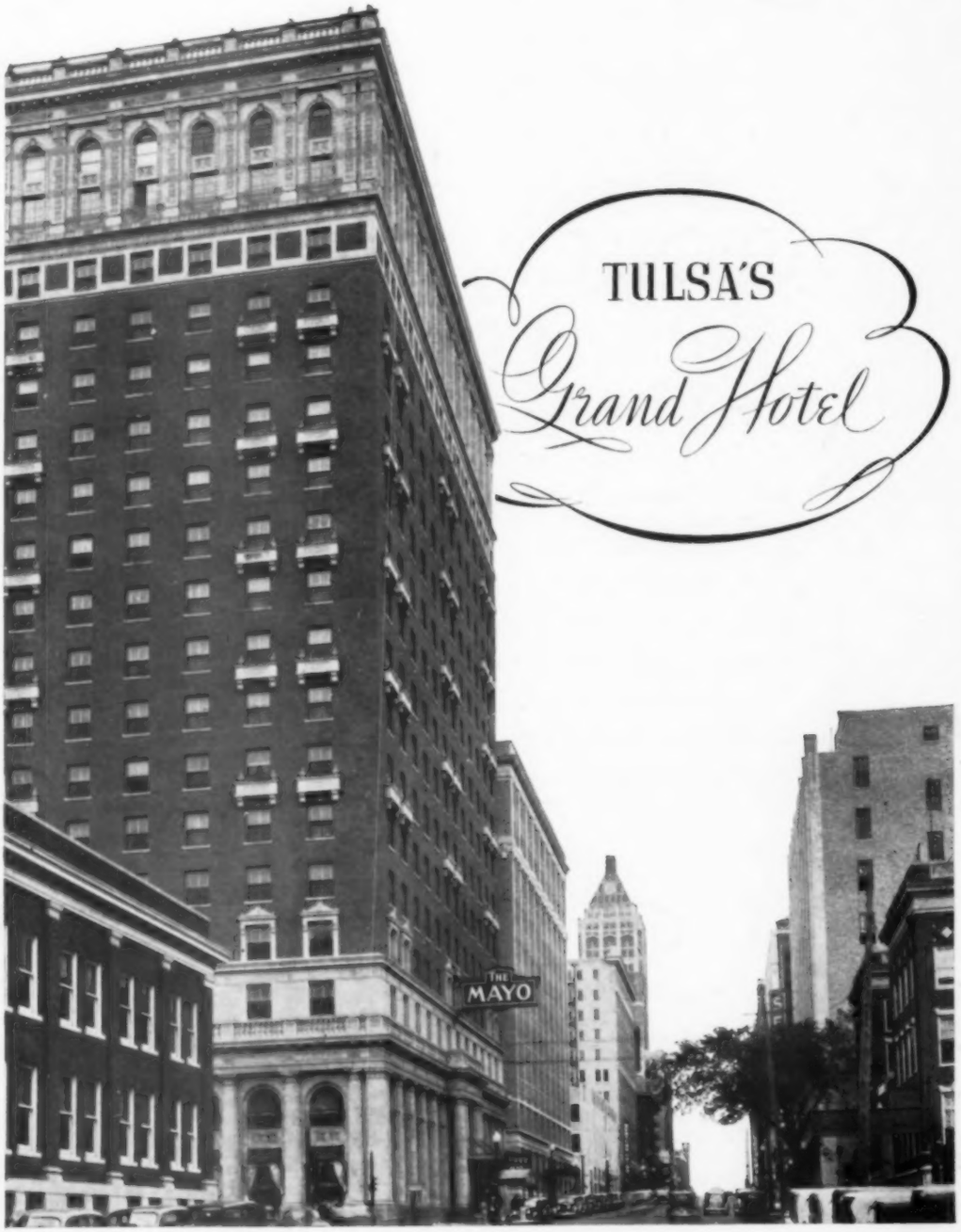


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